200 kb –
150 kb –
100 kb –
50 kb –
23 kb –

A   B

FIGURE 1A   **FIGURE 1B**

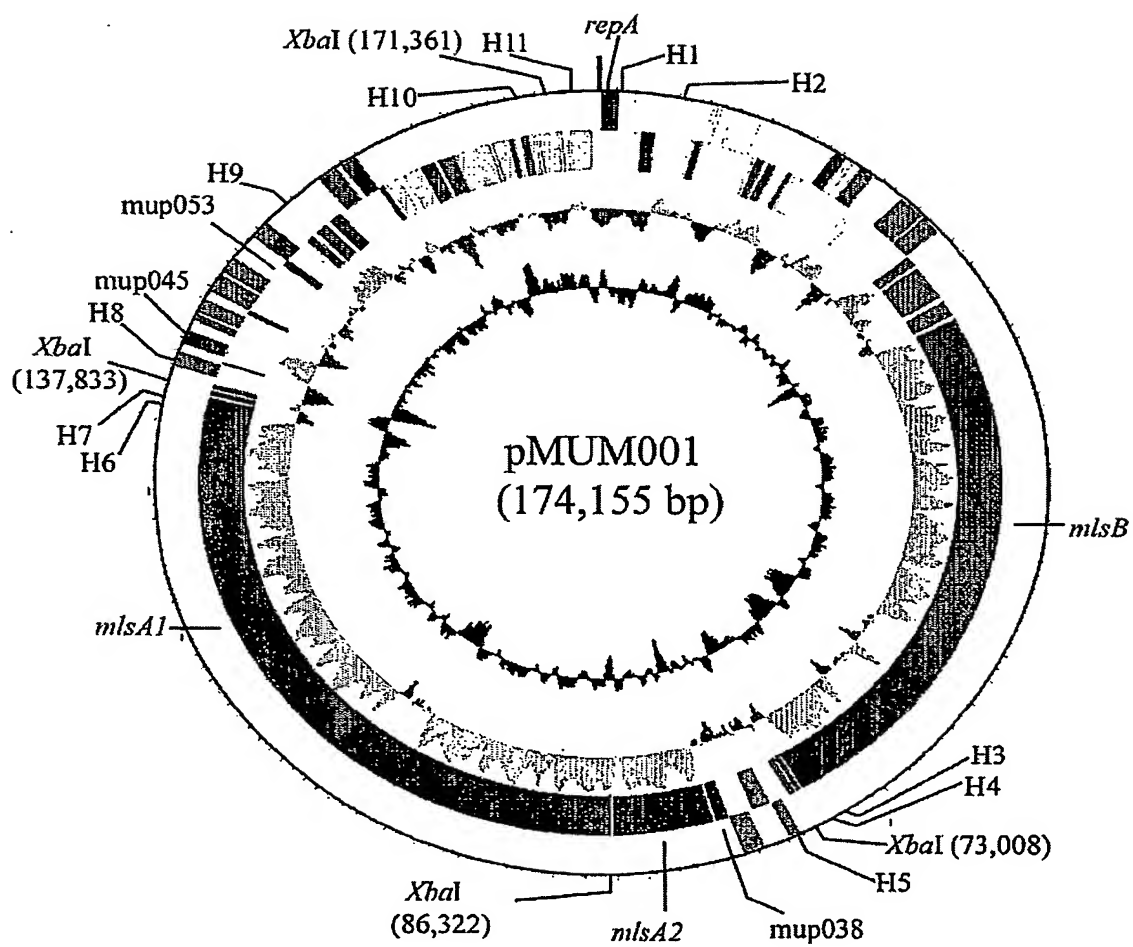FIGURE 2

FIGURE 3

FIGURE 4A   **FIGURE 4B**
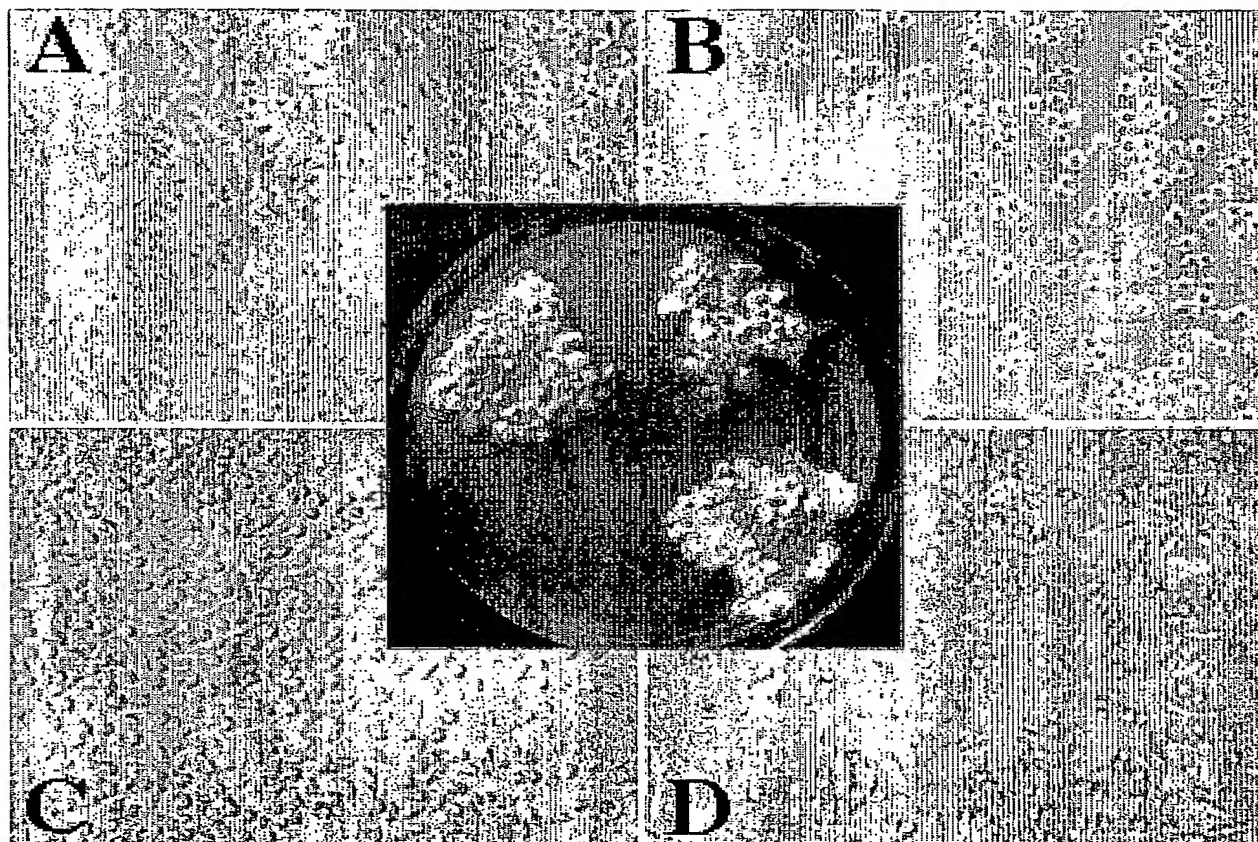
FIGURE 4C   **FIGURE 4D**
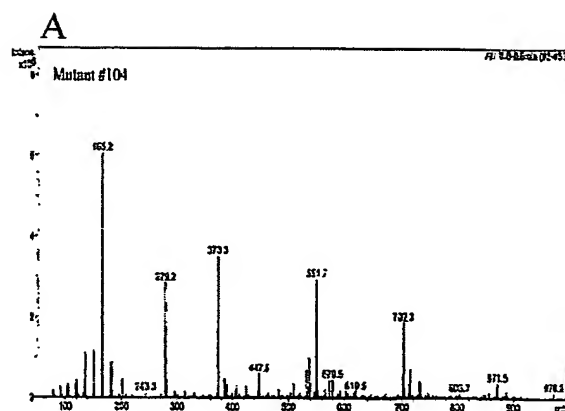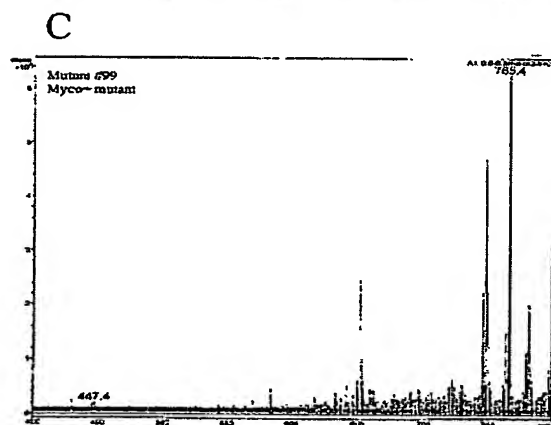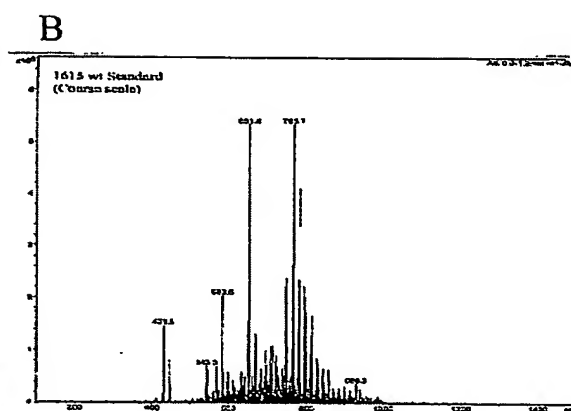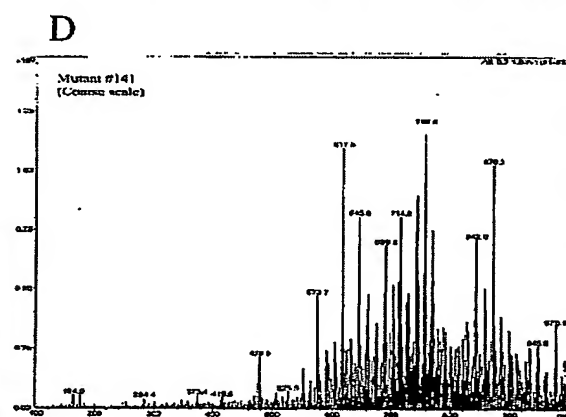
FIGURE 5A

FIGURE 5B

FIGURE 5C

FIGURE 5D

MslA1 gene

```
1      gtgatcttcg gagatgctca ccaaaactgc aggggaggtc gggtgttggg
51     tgatgcagtc gcagtggtcg gaatgtcttg ccgggttcct ggcgcatctg
101    atccggacgc tctgtgggcg ctgctgcgag acgggatcag tgtggtcgat
151    gagatacctt ctgcacgttg gaatttagac ggcctcgttg ctcaccgact
201    gaccgatgag caacgatcag cgcttcggca tggcgccttt cttgatgacg
251    tcgaagggtt tgacgccgcg ttcttcggaa ttaacccctc cgaagctggg
301    tcgatggatc cgcagcaacg attgatgctt gaactgacct gggcagcact
351    cgaagatgct cgaatcgtgc cagaacatct ttccggtagc agtagcgggg
401    tgtttaccgg cgccatgagc gatgattaca cgaccgcggt gacctaccgc
451    gcagcgatga ctgcacatac ctttgcgggg actcaccgca gcctcatagc
501    caaccgtgtc tcctacacac tcggtctacg cggacctagt ttggtcatcg
551    ataccgggca atcgtcctca ctggtggctg tgcacgtggc aatggaaagc
601    ttgcgcagag aagaaacttc acttgctatc gcgggtggta ttcaccttaa
651    cctcagcctc gccgccgcac tgagcgcagc acactttgga gccctttcac
701    ctgacggacg ctgctacacc ttcgacgcac gtgccaacgg atacgttcgt
751    ggcgaaggcg gcggcgtcgt cgtcctcaaa cgtctcaacg acgccctagc
801    cgacggcaac catatttact gtgtgatccg cggcagctca gtcaacaacg
851    acggcgccac tcaagacttg acagcgcccg gagtcgacgg ccagcgtcaa
901    gcgctccttc aagcttatga gcgagccgaa atcgacccct cagaagtcca
951    atacgtcgag ctacatggca ccggcacccg actcggcgat cccaccgaag
1001   cccactcgct tcactccgtc ttcggcacat ccacggtccc gcgcagcccg
1051   ctgctagtcg ggtcaatcaa aaccaatatc ggtcacctcg aaggcgccgc
1101   aggaatcctc ggcctaatca agactgccct tgccgttcat catcgccagc
1151   ttcccccccag cctcaactac acggttccta acccaaaaat cccgctagag
1201   cagctagggc tccgcgtcca aaccactctc agtgaatggc cggacttaga
1251   caaaccgcta acggcgggcg tgtcatcttt ttccatgggt ggcaccaacg
1301   cccacctcat cctccaacaa cccccaccc ccgacaccac acaaaccccc
1351   aaccccacaa caggttctga tcccgcagtg ggttctgatc ccgcagtggg
1401   tgtactggtg tggccgttgt cagcgcgttc agcgccgggg ttaagcgcac
1451   aagcggcccg tctgtaccag catctcagcg cccacccga tctggatccg
1501   atcgatgtag cccacagcct ggctaccaca cgcagccacc accccaccg
1551   cgccaccatc accaccagca ttgagcacca cagcgaaaac aaccacgaca
1601   caaccgatgc gctggccgca ctgcacgccc tggccaacaa cggcacacac
1651   cccctgctga gcagaggcct gctgacccca cagggccccg gcaaaacagt
1701   gttcgtgttc cccggacagg gcagtcaata ccccggcatg ggcgcagatc
1751   tctaccgcca attccccgtg ttcgcccacg ccctcgacga ggtcgctgcg
1801   gcgctgaacc cgcatctcga tgttgcgttg cttgaggtga tgttcagcca
1851   acaagacact gccatggcgc aactgctgga ccagaccttc tatgcacaac
1901   cggcgttgtt cgcgctggga accgctctac atcgattgtt cacccacgcc
1951   ggtatccacc cggactacct gctaggccac tccatcggag aactcaccgc
2001   ggcatacgcc gccggtgtgc tgtcactgca agacgcagcc accttggtca
2051   caagccgagg acgactgatg caatcctgca cgcccggcgg gacgatgctc
2101   gcactacaag ccagcgaagc agaagtacaa ccgctgcttg aaggcctaga
2151   ccacgccgtg tccatcgccg cgatcaacgg agcaacgtcg atcgtactgt
2201   caggagatca cgacagcctc gaacaaatcg gcgagcactt cattacccaa
2251   gatcgacgta ccacccgact gcaggtcagt cacgctttcc actctccaca
2301   tatggacccc atcctcgaac aattccgcca gatcgcggcc caactcacct
2351   tcagcgcacc caccctgccc atcttgtcca acctcaccgg gcagatcgcc
2401   cgccacgacc aactcgcctc acctgactat tggacccaac agctacgtaa
2451   cactgtccgg ttccatgaca ctgtcgctgc cctgctcggg gcgggtgagc
2501   aggttttcct ggaactttca cctcacccgg tgttgacaca agcgatcacc
2551   gacaccgtcg aacaagccgg cggcggcggc gcagcagtgc cagctctacg
2601   caaggatcgc cctgatgctg tcgcgttcgc tgcagcactc ggccagctgc
2651   actgccatgg catcagccca tcctggaatg ttctttactg ccaggcccgc
2701   cccctcacac tgcccaccta cgctttccag catcagcgtt actggctgct
2751   gcccaccgct ggtgatttca gcggggccaa tacccacgcc atgcatccgc
```

FIGURE 6

```
2801 tgctagacac cgccaccgaa ctggccgaaa accgcggatg ggtgttcacc
2851 ggccggatca gcccacgcac ccaaccatgg ctaaacgaac acgccgtcga
2901 atcagccgtg ctgttcccga acaccggatt tgtcgagcta gcgctgcatg
2951 tcgctgaccg tgccggatat tcctcggtca acgaactgat cgtgcacacc
3001 cccctgctgc tcgctggcca cgacaccgcg gatctacaga tcaccgtcac
3051 cgacaccgat gacatgggcc ggcagtctct taacatccac tcgcacccac
3101 atatcggcca tgacaacacc accaccggcg atgaacaacc cgagtgggtc
3151 ctgcatgcca gcgcagtcct gaccgcacaa accaccgacc acaaccacct
3201 cccctaacg cctgtgccgt ggcctccacc cggcacagcc gcgatcgagg
3251 tggatgactt ctacgacgac ctggctgcac agggctacaa ctacggcccg
3301 acattccaag gtgtgcaacg gatatggcgt gaccacgcca cacccgatgt
3351 catctacgcc gaagttgaac tacccgaaga caccgacatc gacggctacg
3401 gcatccaccc cgccctattc gacgccgctt tacacccct actcgccctg
3451 acccaacccc ccaccaacga caccgatgac accaacaccg cagacaccgg
3501 ggaccaggtg cggctgccct acgcctttac cggcatcagt ttgcacgcca
3551 cccacgccac ccgattgcgg gtacggctga cccgtaccgg cgccgatgcc
3601 atcaccgtgc acaccagtga caccaccgga gccccggtgg cgatcatcga
3651 ctcattgatc acccgccccc tcaccaccgc cacagggtct gctccggcaa
3701 ccacagcagc tggcctacta cacctgagct ggccaccaca ccctgacacc
3751 acgaccgaca ccgacaccga caccgatgcc ctgcggtatc aggtgatcgc
3801 cgaacccact caacaactgc cccgctacct gcacgaccta cacaccagca
3851 ccgacctgca caccagcacc accgaagcag acgtggttgt gtggccggta
3901 ccggtgccca gcaacgaaga gctccaggca caccaagcat ccgacaccgc
3951 ggtgtcttct cggatacaca ccctgacccg ccaaacactt accgtggtgc
4001 aggactggct cactcacccc gacaccaccg gcacccgact ggtcatcgtg
4051 acccgccacg gcgtcagcac cagtgcccac gacccggtcc ccgacctagc
4101 ccacgccgca gtgtggggcc tgatccgcag cgcccaaaac gaacaccccg
4151 gacgcttcac actgctcgac accgacgaca acaccaacag cgacaccctc
4201 accaccgccc taccctgcc aacccgcgaa aaccaactgg ccatacgccg
4251 cgacaccatc cacatcccc gcctgacccg acacagcagt gacggtgcgc
4301 tcactgcgcc ggtggtggta gatcctgagg gcacggtgtt gatcaccggg
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4401 tggtgtccgg catctgttgt tgacctcgcg gcgcggacct caggcccacg
4451 gtgccaccga.tctgcagcag cggctcaccg atctaggtgc tcatgtcacc
4501 atcacggcct gcgatatcag cgaccccgaa gcactggccg ccctggtcaa
4551 ttcagtgccc acacaacacc gtttaaccgc ggtagtgcac accgccgcgg
4601 tattggccga cacccccggtc accgagttga ccggcgatca actcgaccag
4651 gtgctggccc ccaaaatcga cgcggcatgg cagctgcacc aactcaccta
4701 cgaacacaac ctgtctgcat tcatcatgtt ctcgtccatg gccggaatga
4751 taggcagtcc cggtcagggt aactacgcgg cagccaacac cgcgttagat
4801 gctctcgccg actaccgcca ccgcctgggc ttgcccgcga ccagcctggc
4851 ctggggctac tggcagactc acaccggtct caccgcgcat ctaaccgatg
4901 tagatctagc ccgcatgacc cgcctgggtt tgatgcccat cgccaccagc
4951 cacggactgg ccctgttcga tgccgccctc gccaccggac agcccgtttc
5001 gataccegcc ccgatcaaca cccacaccct ggcccgacac gcccgcgaca
5051 acaccctggc cccgatcctg tctgcgctga tcaccacacc acggcgccgg
5101 gcggcctctg ccgcaaccga tctcgctgcc cgcctcaacg gacttagccc
5151 ccaacagcaa caacaaacac tggccaccct cgtggccgcg gccaccgcca
5201 ccgtgctggg ccaccacacc cccgaaagca tcagcccagc caccgcgttc
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5301 cacccacaac accggcctca acctttcgtc cactcttatc ttcgatcacc
5351 ccacacccca tgcggtggcc gagcatctgc ttgaacagat ccctggcatc
5401 ggtgccctgg tgccggctcc ggtggtgatc gcagctggtc gtaccgagga
5451 gccggtggcg gtggtgggga tggcgtgtcg tttccccggt ggtgtcgcat
5501 cagcggatca gttgtgggac ttggtgatcg ctggccgtga tgtggtgggt
5551 aattttccgg ccgatcgggg ttgggatgtg gagggactgt ttgatcccga
5601 tccggacgcg gtcggcaaaa cctacacccg ttacggcgcg ttccttgacg
```

FIGURE 6(continued)

```
5651 atgcggcagg ttttgatgcc gggttctttg ggatctctcc acgggaggca
5701 cgcgcgatgg accccagca gcggctgctg ctggaggtgt gctgggaagc
5751 gctagaaacc gcgggtattc ccgcgcacac cttggccggc acctccaccg
5801 gggtattcgt cggagcctgg gcccagtcct acggcgccac caactccgat
5851 gacgctgagg ggtatgcgat gaccggcggc gcgactagcg tcatgtccgg
5901 ccgtatcgcc tacaccttgg gcctagaagg tccagcgatc accgttgaca
5951 ccgcctgctc gtcatcgctg gtggcaattc acctggcctg ccaatcctta
6001 cgcaacaacg aatcccagct agcactggcc ggcggcgtca ccgtgatgag
6051 cacacctgcg gttttcaccg atttctcccg ccaacgcggc ctggccccag
6101 atggacgctg caaagccttc gccgctaccg ccgatggcac cggctggggt
6151 gaaggcgccg cggtcttggt ccttgaacgg ctctccgagg cccgccgcaa
6201 caaccacccg gtccttgcga tcgtcgctgg atcggcgatc aaccaagacg
6251 gcgcatccaa cggactgacc gcaccccacg gcccgtcaca caacgcgtc
6301 atcaaccaag cactagccaa cgccggcctc acccacgacc aggtcgacgc
6351 cgtcgaagcc cacggcaccg gcaccacact gggtgacccc atcgaagccg
6401 gcgccctaca cgccacctac ggccaccacc acacgcccga tcaaccgctt
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6501 cgccgccggt gtggtcaaga tgatccaagc catcacccac gccaccttgc
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6651 cccccgcacc gcggcggtgt cctcattcgg catcagcggc accaacgccc
6701 acctcatcct ccaacaaccc cccacccccg acaccacaca aacccccaac
6751 cccacaacag gttctgatcc cgcagtgggt tctgattccg cagtgggttc
6801 tgatcccgca gtgggtgtac tggtgtggcc gttgtcagcg cgttcagcgc
6851 cggggttaag cgcacaagcg gcccgtctgt accagcatct cagcgcccac
6901 cccgatctgg atccgatcga tgtagcccac agcctggcta ccacacgcag
6951 ccaccacccc caccgcgcca ccatcaccac cagcattgag caccacagcg
7001 aaaacaacca cgacacaacc gatgcgctgg ccgcactgca cgccctggcc
7051 aacaacggca cacaccccct gctgagcaga ggcctgctga ccccacaggg
7101 ccccggcaaa acagtgttcg tgttccccgg acagggcagt caataccccg
7151 gcatgggcgc agatctctac cgccaattcc ccgtgttcgc ccacgccctc
7201 gacgaggtcg ctgcggcgct gaacccgcat ctcgatgttg cgttgcttga
7251 ggtgatgttc agccaacaag acactgccat ggcgcaactg ctggaccaga
7301 ccttctatgc acaaccggcg ttgttcgcgc tgggaaccgc tctacatcga
7351 ttgttcaccc acgccggtat ccacccggac tacctgctag gccactccat
7401 cggagaactc accgcggcat acgccgccgg tgtgctgtca ctgcaagacg
7451 cagccacctt ggtcacaagc cgaggacgac tgatgcaatc ctgcacgccc
7501 ggcgggacga tgctcgcact acaagccagc gaagcagaag tacaaccgct
7551 gcttgaaggc ctagaccacg ccgtgtccat cgccgcgatc aacggagcaa
7601 cgtcgatcgt actgtcagga gatcacgaca gcctcgaaca aatcggcgag
7651 cacttcatta cccaagatcg acgtaccacc cgactgcagg tcagtcacgc
7701 tttccactct ccacatatgg accccatcct cgaacaattc cgccagatcg
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7851 ccaacagcta cgtaacactg tccggttcca tgacactgtc gctgccctgc
7901 tcggggcggg tgagcaggtt ttcctggaac tttcacctca cccggtgttg
7951 acacaagcga tcaccgacac cgtcgaacaa gccggcggcg cggcgcagc
8001 agtgccagct ctacgcaagg atcgccctga tgctgtcgcg ttcgctgcag
8051 cactcggcca gctgcactgc catggcatca gcccatcctg gaatgttctt
8101 tactgccagg cccgcccccct cacactgccc acctacgctt tccagcatca
8151 gcgttactgg ctgctgccca ccgctggtga tttcagcggg gccaataccc
8201 acgccatgca tccgctgcta gacaccgcca ccgaactggc cgaaaaccgc
8251 ggatgggtgt tcaccggccg gatcagccca cgcacccaac catggctaaa
8301 cgaacacgcc gtcgaatcag ccgtgctgtt cccgaacacc ggatttgtcg
8351 agctagcgct gcatgtcgct gaccgtgccg gatattcctc ggtcaacgaa
8401 ctgatcgtgc acacccccct gctactcgct ggccacgaca ccgcggatct
8451 acagatcacc gtcaccgaca ccgatgacat gggccggcag tctcttaaca
```

FIGURE 6(continued)

```
8501 tccactcgcg cccacatatc ggccatgaca acaccaccac cggcgatgaa
8551 caacccgagt gggtcctgca tgccagcgca gtcctgaccg cacaaaccac
8601 cgaccacaac cacctccccc taacgcctgt gccgtggcct ccacccggca
8651 cagccgcgat cgaggtggat gacttctacg acgacctggc tgcacagggc
8701 tacaactacg gcccgacatt ccaaggtgtg caacggatat ggcgtgacca
8751 cgccacaccc gatgtcatct acgccgaagt tgaactaccc gaagacaccg
8801 acatcgacgg ctacggcatc caccccgccc tattcgacgc cgctttacac
8851 cccctactcg ccctgaccca acccccacc aacgacaccg atgacaccaa
8901 caccgcagac accggtgacc aggtgcggct gccctacgcc tttaccggca
8951 tcagtttgca cgccacccac gccacccgat tgcgggtacg gctgacccgt
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9051 ggtggcgatc atcgactcat tgatcacccg cccccctcacc accgccacag
9101 ggtctgctcc ggcaaccaca gcagctggcc tactacacct gagctggcca
9151 ccacaccctg acaccacgac cgacaccgac accgacaccg atgccctgcg
9201 gtatcaggtg atcgccgaac ccactcaaca actgcccgc tacctgcacg
9251 acctacacac cagcaccgac ctgcacacca gcaccaccga agcagacgtg
9301 gttgtgtggc cggtaccggt gcccagcaac gaagagctcc aggcacacca
9351 agcatccgac accgcggtgt cttctcggat acacaccctg acccgccaaa
9401 cacttaccgt ggtgcaggac tggctcactc accccgacac caccggcacc
9451 cgactggtca tcgtgacccg ccacggcgtc agcaccagtg cccacgaccc
9501 ggtccccgac ctagcccacg ccgcagtgtg gggcctgatc cgcagcgccc
9551 aaaacgaaca ccccggacgc ttcacactgc tcgacaccga cgacaacacc
9601 aacagcgaca ccctcaccac cgccctaacc ctgccaaccc gcgaaaacca
9651 actggccata cgccgcgaca ccatccacat cccccgcctg acccgacaca
9701 gcagtgacgg tgcgctcact gcgccggtgg tggtagatcc tgagggcacg
9751 gtgttgatca ccggggggac cgggacgctg ggtgccttgt tcgccgagca
9801 tctggtttct gcccatggtg tccggcatct gttgttgacc tcgcggcgcg
9851 gacctcaggc ccacggtgcc accgatctgc agcagcggct caccgatcta
9901 ggtgctcatg tcaccatcac ggcctgcgat atcagcgacc ccgaagcact
9951 ggccgccctg gtcaattcag tgcccacaca acaccgttta accgcggtag
10001 tgcacaccgc cgcggtattg gccgacaccc cggtcaccga gttgaccggc
10051 gatcaactcg accaggtgct ggcccccaaa atcgacgcgg catggcagct
10101 gcaccaactc acctacgaac acaacctgtc tgcattcatc atgttctcgt
10151 ccatggccgg aatgataggc agtcccggtc agggtaacta cgcggcagcc
10201 aacaccgcgt tagatgctct cgccgactac cgccaccgcc tgggcttgcc
10251 cgcgaccagc ctggcctggg gctactggca gactcacacc ggtctcaccg
10301 cgcatctaac cgatgtagat ctagcccgca tgacccgcct gggtttgatg
10351 cccatcgcca ccagccacgg actggccctg ttcgatgccg ccctcgccac
10401 cggacagccc gtttcgatac ccgccccgat caacacccac accctggccc
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10601 ccgcggccac cgccaccgtg ctgggccacc acaccccga aagcatcagc
10651 ccagccaccg cgttcaaaga cctcggaatc gattcgctga ccgcccttga
10701 actgcgcaac accctcaccc acaacaccgg cctcaacctt tcgtccactc
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10951 cgtgatgtgg tgggtaattt tccggccgat cggggttggg atgtggaggg
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11051 gcgcgttcct tgacgatgcg gcaggttttg atgccgggtt cttttgggatc
11101 tctccacggg aggcacgcgc gatggacccc cagcagcggc tgctgctgga
11151 ggtgtgctgg gaagcgctag aaaccgcggg tattcccgcg cacaccttgg
11201 ccggcacctc caccgggta ttcgtcggag ccggggccca gtcctacggc
11251 gccaccaact ccgatgacgc tgaggggtat gcgatgaccg gcggcgcgac
11301 tagcgtcatg tccggccgta tcgcctacac cttgggccta gaaggtccag
```

FIGURE 6(continued)

```
11351 cgatcaccgt tgacaccgcc tgctcgtcat cgctggtggc aattcacctg
11401 gcctgccaat ccttacgcaa caacgaatcc cagctagcac tggccggcgg
11451 cgtcaccgtg atgagcacac ctgcgatttt caccgagttc tcccgccaac
11501 gcggcctggc cccagatgga cgctgcaaag ccttcgccgc taccgccgat
11551 ggcaccggct ggggtgaagg cgccgcggtc ttggtccttg aacggctctc
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11651 cgatcaacca agacggcgca tccaacggac tgaccgcacc ccacggcccg
11701 tcacaacaac gcgtcatcaa ccaagcacta gccaacgccg gcctcaccca
11751 cgaccaggtc gacgccgtcg aagcccacgg caccggcacc acactgggtg
11801 accccatcga agccggcgcc ctacacgcca cctacggcca ccaccacacg
11851 cccgatcaac cgctttggct gggatccatc aaatccaaca tcggccacac
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11951 cccacgccac cttgcccgcc accttgcacg tcgaccaacc cagcccccac
12001 atcgactggt ccagcggcac agtccgactc ctaaccgagc ccatccaatg
12051 gcccaacacc gaccaccccc gcaccgcggc ggtgtcctca ttcggcatca
12101 gcggcaccaa cgcccacctc atcctccaac aaccccccac ccccgacacc
12151 acacaaaccc ccaaccccac aacaggttct gatcccgcag tgggttctga
12201 ttccgcagtg ggttctgatc ccgcagtggg tgtactggtg tggccgttgt
12251 cagcgcgttc agcgccgggg ttaagcgcac aagcggcccg·tctgtaccag
12301 catctcagcg cccacccga tctggatccg atcgatgtag cccacagcct
12351 ggctaccaca cgcagccacc accccaccg cgccaccatc accaccagca
12401 ttgagcacca cagcgaaaac aaccacgaca caaccgatgc gctggccgca
12451 ctgcacgccc tggccaacaa cggcacacac cccctgctga gcagaggcct
12501 gctgacccca cagggccccg gcaaaacagt gttcgtgttc cccggacagg
12551 gcagtcaata ccccggcatg ggcgcagatc tctaccgcca attccccgtg
12601 ttcgcccacg ccctcgacgc atgcgacgca gcgttacagc cttcactgg
12651 atggtcggtg ctagctgtgt tacacgacga acccgaggcc cgtcgttgg
12701 agcgagtcga tgtggtccag cctgtgttgt tctcggtgat ggtgtcgtta
12751 gccgcactct ggcggtgggc cggaatcacc cccgatgcag tcatcggcca
12801 ctcccagggc gagatcgccg cggcacatgt ggccggagcc ctgaccttgc
12851 ccgaagcagc tgcggtagtg gctttgcgca gccgtgtctt gaccgacctg
12901 gccggtgccg gtgccatggc ttcagtgcta tcgcccgagg aaccactgac
12951 ccagctgctg gcacggtggg acggcaagat cactgtcgcc gcagttaacg
13001 gccccgctag cgctgtggtc tccggcgata ccacagcgat caccgaattg
13051 ctgattacct gcgaacacga aaacatcgac gctcgcgcta tcccggtgga
13101 ctacccctct cattccccct atatggaaca catccgccat cagttcctcg
13151 acgagctacc cgagctgaca ccgcggccat caaccatcgc gatgtattcc
13201 accgtcgacg gcgaacctca cgacaccgcc tacgacacca ccacaatgac
13251 cgcggactac tggtaccgca acatccgtaa cactgtccgg ttccatgaca
13301 ctgtcgctgc cctgctcggg gcgggtgagc aggtttttcct ggaactttca
13351 cctcacccgg tgttgacaca agcgatcacc gacaccgtcg aacaagccgg
13401 cggcggcggc gcagcagtgc cagctctacg caaggatcgc cctgatgctg
13451 tcgcgttcgc tgcagcactc ggccagctgc actgccatgg catcagccca
13501 tcctggaatg ttctttactg ccaggcccgc cccctcacac tgcccaccta
13551 cgctttccag catcagcgtt actggctgct gcccaccgct ggtgatttca
13601 gcggggccaa tacccacgcc atgcatccgc tgctagacac cgccaccgaa
13651 ctggccgaaa accgcggatg ggtgttcacc ggccggatca gcccacgcac
13701 ccaaccatgg ctaaacgaac acgccgtcga atcagccgtg ctgttcccag
13751 gcaccggatt cgtcgagcta cgcgctgcatg tcgctgaccg tgccggatat
13801 tcctcggtca acgaactgat cgtgcacacc ccctgctac tcgctggcca
13851 cgacaccgcg gatctacaga tcaccgtcac cgacaccgat gacatgggcc
13901 ggcagtctct taacatccac tcgcgcccac atatcggcca tgacaacacc
13951 accaccggcg atgaacaacc cgagtgggtc ctgcatgcca gcgcagtcct
14001 gaccgcacaa accaccgacc acaaccacct ccccctaacg cctgtgccgt
14051 ggcctccacc cggcacagcc gcgatcgagg tggatgactt ctacgacgac
14101 ctggctgcac agggctacaa ctacggcccg acattccaag gtgtgcaacg
14151 gatatggcgt gaccacgcca cacccgatgt catctacgcc gaagttgaac
```

<p style="text-align:center">FIGURE 6(continued)</p>

```
14201 tacccgaaga caccgacatc gacggctacg gcatccaccc cgccctattc
14251 gacgccgctt tacacccct actcgccctg acccaacccc ccaccaacga
14301 caccgatgac accaacaccg cagacaccgg tgaccaggtg cggctgccct
14351 acgcctttac cggcatcagt ttgcacgcca cccacgccac ccgattacgg
14401 gtacggctga cccgtaccgg cgccgatgcc atcaccgtgc acaccagtga
14451 caccaccgga gccccggtgg cgatcatcga ctcattgatc acccgccccc
14501 tcaccaccgc cacagggtct gctccggcaa ccacagcagc tggcctacta
14551 cacctgagct ggccaccaca ccctgacacc acgaccgaca ccgacaccga
14601 caccgatgcc ctgcggtatc aggtgatcgc cgaacccact caacaactgc
14651 cccgctacct gcacgaccta cacaccagca ccgacctgca caccagcacc
14701 accgaagcag acgtggttgt gtggccggta ccggtgccca gcaacgaaga
14751 gctccaggca caccaagcat ccgacaccgc ggtgtcttct cggatacaca
14801 ccctgacccg ccaaacactt accgtggtgc aggactggct cactcacccc
14851 gacaccaccg gcacccgact ggtcatcgtg acccgccacg gcgtcagcac
14901 cagtgcccac gacccggtcc ccgacctagc ccacgccgca gtgtggggcc
14951 tgatccgcag cgcccaaaac gaacaccccg gacgcttcac actgctcgac
15001 accgacgaca acaccaacag cgacaccctc accaccgccc taaccctgcc
15051 aacccgcgaa aaccaactgg ccatacgccg cgacaccatc cacatccccc
15101 gcctgacccg caccgctgtc ctgacaccac cggacagcgg ccccctggcgc
15151 cttgacacca ccggcaaggg tgatctggcc aacctcgccc tgctaccgac
15201 cgcccacact gccctggcct ctggacaaat ccgtatcgat gtccgggccg
15251 ctggtttgaa ttttcacgac gtggtcgtcg cgttggggct aatccccgac
15301 gacggattcg gcggagaagc cgccgggggtg atcagcgaga tcggtcccga
15351 cgtctacgga ttcgccgtgg gtgatgccgt gaccggcatg accgtctctg
15401 gtgcgtttgc ccccagcact gtcgctgatc accgcatggt gatgacgatc
15451 ccggcccggt ggtccttccc ccaagccgca tccataccgg tggtattcct
15501 gaccgcctac atcgctttgg ccgagatctc gggcctaagc cgagggcaac
15551 gagtgctgat ccatgccggc actggcggtg tgggtatggc tgcgattcaa
15601 ttggcacacc atttgggtgc cgaagtattc gccaccgcca gcgccgcgaa
15651 atggagcacc cttgaggcac tgggggtacc gcgcgaccat atcgcttcct
15701 cgcgtactct ggacttttcc aacgcattcc tcgatgccac caacggcgcc
15751 ggtgttgatg tcgtattgaa ctgcctcagt ggtgaattcg tcgaagcatc
15801 cctagccctg ctgccccgcg gtggccattt cgtcgaaatc ggcaaaaccg
15851 acatccgtga taccgaggtc atcgccgcaa cccatcccgg cgtcatttac
15901 cgcgccctcg atctgctcag cgtctccccc gatcacatcc agcgcacact
15951 ggcccaactg tccccactgt ttgccaccga caccctaaaa cccctaccga
16001 ccactaatta cagcatctac caagccatct cggccttacg tgacatgagt
16051 caagcccgtc acacaggcaa gatcgtgctc actcgcgcgg tggtggtaga
16101 tcctgagggc acggtgttga tcaccggggg gaccgggacg ctgggtgcct
16151 tgttcgccga gcatctggtt tctgcccatg gtgtccggca tctgttgttg
16201 acctcgcggc gcggacctca ggcccacggt gccaccgatc tgcagcagcg
16251 gctcaccgat ctaggtgctc atgtcaccat cacggcctgc gatatcagcg
16301 accccgaagc actggccgcc ctggtcaatt cagtgcccac acaacaccgt
16351 ttaaccgcgg tagtgcacac cgccgtggta ttggccgaca ccccggtcac
16401 cgagttgacc ggcgatcaac tcgaccaggt gctggccccc aaaatcgacg
16451 cggcatggca gctgcaccaa ctcacctacg aacacaacct gtctgcattc
16501 atcatgttct cgtccatggc cggaatgata ggcagtcccg gtctgggtaa
16551 ctacgcggca gccaacaccg cgttagatgc tctcgccgac taccgccacc
16601 gcctgggctt gcccgcgacc agcctggcct ggggctactg gcagacccgc
16651 accggtctca ccgcgcatct aaccgatgta gatctagccc gcatgacccg
16701 cctgggtttg atgcccatcg ccaccagcca cggactggcc ctgttcgatg
16751 ccgccctcgc caccggacag cccgtttcga tacccgcccc gatcaacacc
16801 cacaccctgg cccgacacgc ccgcgacaac accctggccc cgatcctgtc
16851 tgcgctgatc accacaccac ggcgccgggc ggcctctgcc gcaaccgatc
16901 tcgctgcccg cctcaacgga cttagccccc aacagcaaca acaaacactg
16951 gccaccctcg tggccgcggc caccgccacc gtgctgggcc accacacccc
17001 cgaaagcatc agcccagcca ccgcgttcaa agacctcgga atcgattcgc
```

FIGURE 6(continued)

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17051 tgaccgccct tgaactgcgc aacaccctca cccacaacac cggcctcaac
17101 ctttcgtcca ctcttatctt cgatcacccc acaccccatg cggtggccga
17151 gcatctgctt gaacagatcc ctggcatcgg tgccctggtg ccggctccgg
17201 tggtgatcgc agctggtcgt accgaggagc cggtggcggt ggtggggatg
17251 gcgtgtcgtt cccccggtgg tgtcgcatca gcggatcagt tgtgggactt
17301 ggtgatcgct ggccgtgatg tggtgggtaa ttttccggcc gatcggggtt
17351 gggatgtgga gggactgttt gatcccgatc cggacgcggt cggcaaaacc
17401 tacacccgtt acggcgcgtt ccttgacgat gcggcaggtt ttgatgccgg
17451 gttctttggg atctctccac gggaggcacg cgcgatggac ccccagcagc
17501 ggctgctgct ggaggtgtgc tgggaagcgc tagaaaccgc gggtattccc
17551 gcgcacacct tggccggcac ctccaccggg gtattcgtcg gagccggggc
17601 ccagtcctac ggcgccacca actccgatgg cgctgagggg tatgcgatga
17651 ccggcggcgc gatcagcgtc atgtccggcc gtatcgccta caccttgggc
17701 ctagaaggtc cagcgatcac cgttgacacc gcctgctcgt catcgctggt
17751 ggcaattcac ctggcctgcc aatccttacg caacaacgaa tcccagctag
17801 cactggccgg cggcgtcacc gtgatgagca cacctgcgat tttcaccgag
17851 ttctcccgcc aacgcggcct ggccccagat ggacgctgca aagccttcgc
17901 cgctaccgcc gatggcaccg gctttggtga aggcgccgcg gtcttggtcc
17951 ttgaacggct ctccgaggcc cgccgcaaca accacccggt ccttgcgatc
18001 gtcgctggat cggcgatcaa ccaagacggc gcatccaacg gactgaccgc
18051 accccacggc ccgtcacaac aacgcgtcat caaccaagca ctagccaacg
18101 ccggcctcac ccacgaccag gtcgacgccg tcgaagccca cggcaccggc
18151 accacactgg gtgaccccat cgaagccagc gccctacacg ccacctacgg
18201 ccaccaccac acgcccgatc aaccgctttg gctgggatcc atcaaatcca
18251 acatcggcca cacccaagcc gccgccggcg ccgccggtgt ggtcaagatg
18301 atccaagcca tcacccacgc caccttgccc gccaccttgc acgtcgacca
18351 acccagcccc cacatcgact ggtccagcgg cacagtccga ctcctaaccg
18401 agcccatcca atgggcaac accgaccacc cccgcaccgc ggcggtgtcc
18451 tcattcggca tcagcggcac caacgcccac ctcatcctcc aacaacccc
18501 cacccccgac accacacaaa ccccccaacac cacaacaggt tctgatcccg
18551 cagtgggttc tgattccgca gtgggttctg atcccgcagt gggtgtactg
18601 gtgtggccgt tgtcagcgcg ttcagcgccg gggttaagcg cacaagcggc
18651 ccgtctgtac cagcatctca gcgcccaccc cgatctggat ccgatcgatg
18701 tagcccacag cctggctacc acacgcagcc accacccca ccgcgccacc
18751 atcaccacca gcattgagca ccacagcgaa aacaaccacg acacaaccga
18801 tgcgctggcc gcactgcacg ccctggccaa caacggcaca cacccctgc
18851 tgagcagagg cctgctgacc ccacagggcc ccggcaaaac agtgttcgtg
18901 ttccccggac agggcagtca ataccccggc atgggcgcag atctctaccg
18951 ccaattcccc gtgttcgccc acgccctcga cgcatgcgac gcagcgttac
19001 agcctttcac tggatggtcg gtgctagctg tgttacacga cgaacccgag
19051 gccccgtcgt tggagcgggt cgatgtggtc cagcctgtgt tgttctcggt
19101 gatggtgtcg ttagccgcac tctggcggtg ggccggaatc accccgatg
19151 cagtcatcgg ccactcccag ggcgagatcg ccgcggcaca tgtggccgga
19201 gccctgacct tgcccgaagc agctgcggta gtggctttgc gcagccgtgt
19251 cttgaccgac ctggccggtg ccggtgccat ggcttcagtg ctatcgcccg
19301 aggaaccact gacccagctg ctggcacggt gggacggcaa gatcactgtc
19351 gccgcagtta acggccccgc tagcgctgtg gtctccggcg ataccacagc
19401 gatcaccgaa ttgctgatta cctgcgaaca cgaaaacatc gacgctcgcg
19451 ctatcccggt ggactacccc tctcattccc cctatatgga acacatccgc
19501 catcagttcc tcgacgagct acccgagctg acaccgcggc catcaaccat
19551 cgcgatgtat tccaccgtcg acggcgaacc tcacgacacc gcctacgaca
19601 ccaccacaat gaccgcggac tactggtacc gcaacatccg taacactgtc
19651 cggttccatg acactgtcgc tgccctgctc ggggcggtg agcaggtttt
19701 cctggaactt tcacctcacc cggtgttgac acaagcgatc accgacaccg
19751 tcgaacaagc cggcggcggc ggcgcagcag tgccagctct acgcaaggat
19801 cgccctgatg ctgtcgcgtt cgctgcagca ctcggccagc tgcactgcca
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FIGURE 6(continued)

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19851  tggcatcagc  ccatcctgga  atgttcttta  ctgccaggcc  cgccccctca
19901  cactgcccac  ctacgctttc  cagcatcagc  gttactggct  gctgcccacc
19951  gctggtgatt  tcagcggggc  caatacccac  gccatgcatc  cgctgctaga
20001  caccgccacc  gaactggccg  aaaaccgcgg  atgggtgttc  accggccgga
20051  tcagcccacg  cacccaacca  tggctaaacg  aacacgccgt  cgaatcagcc
20101  gtgctgttcc  caggcaccgg  atttgtcgag  ctagcgctgc  atgtcgctga
20151  ccgtgccgga  tattcctcgg  tcaacgaact  gatcgtgcac  accccctgc
20201  tgctcgctgg  ccacgacacc  gcggatctac  agatcaccgt  caccgacacc
20251  gatgacatgg  gccggcagtc  tcttaacatc  cactcgcgcc  cacatatcgg
20301  ccatgacaac  accaccaccg  gcgatgaaca  acccgagtgg  gtcctgcatg
20351  ccagcgcagt  cctgaccgca  caaaccaccg  accacaacca  cctcccccta
20401  acgcctgtgc  cgtggcctcc  acccggcaca  gccgcgatcg  aggtggatga
20451  cttctacgac  gacctggctg  cacaggcta  caactacggc  ccgacattcc
20501  aaggtgtgca  acggatatgg  cgtgaccacg  ccacacccga  tgtcatctac
20551  gccgaagttg  aactacccga  agacaccgac  atcgacggct  acggcatcca
20601  ccccgcccta  ttcgacgccg  ctttacaccc  cctactcgcc  ctgacccaac
20651  cccccaccaa  cgacaccgat  gacaccaaca  ccgcagacac  cggggaccag
20701  gtgcggctgc  cctacgcctt  taccggcatc  agtttgcacg  ccacccacgc
20751  cacccgattg  cgggtacggc  tgacccgtac  cggcgccgat  gccatcaccg
20801  tgcacaccag  tgacaccacc  ggagccccgg  tggcgatcat  cgactcattg
20851  atcacccgcc  ccctcaccac  cgccacaggg  tctgctccgg  caaccacagc
20901  agctggccta  ctacacctga  gctggccacc  acaccctgac  accacgaccg
20951  acaccgacac  cgacaccgat  gccctgcggt  atcgggtgat  cgccgaaccc
21001  actcaacaac  tgccccgcta  cctgcacgac  ctacacacca  gcaccgacct
21051  gcacaccagc  accaccgaag  cagacgtggt  tgtgtggccg  gtaccggtgc
21101  ccagcaacga  agagctccag  gcacaccaag  catccgacac  cgcggtgtct
21151  tctcggatac  acaccctgac  ccgccaaaca  cttaccgtgg  tgcaggactg
21201  gctcactcac  cccgacacca  ccggcacccg  actggtcatc  gtgacccgcc
21251  acggcgtcag  caccagtgcc  cacgacccgg  tccccgacct  agcccacgcc
21301  gcagtgtggg  gcctgatccg  cagcgcccaa  aacgaacacc  ccggacgctt
21351  cacactgctc  gacaccgacg  acaacaccaa  cagcgacacc  ctcaccaccg
21401  ccctaaccct  gccaacccgc  gaaaaccaac  tggccatacg  ccgcgacacc
21451  atccacatcc  cccgcctgac  ccgacacagc  agtgacggtg  cgctcactgc
21501  gccggtggtg  gtagatcctg  agggcacggt  gttgatcacc  gggggggaccg
21551  ggacgctggg  tgccttgttc  gccgagcatc  tggtttctgc  ccatggtgtc
21601  cggcatctgt  tgttgacctc  gcggcgcgga  cctcaggccc  acggtgccac
21651  cgatctgcag  cagcggctca  ccgatctagg  tgctcatgtc  accatcacgg
21701  cctgcgatat  cagcgacccc  gaagcactgg  ccgccctggt  caattcagtg
21751  cccacacaac  accgtttaac  cgcggtagtg  cacaccgccg  cggtattggc
21801  cgacaccccg  gtcaccgagt  tgaccggcga  tcaactcgac  caggtgctgg
21851  cccccaaaat  cgacgcggca  tggcagctgc  accaactcac  ctacgaacac
21901  aacctgtctg  cattcatcat  gttctcgtcc  atggccggaa  tgataggcag
21951  tcccggtcag  ggtaactacg  cggcagccaa  caccgcgtta  gatgctctcg
22001  ccgactaccg  ccaccgcctg  ggcttgcccg  cgaccagcct  ggcctggggc
22051  tactggcaga  ctcacaccgg  tctcaccgcg  catctaaccg  atgtagatct
22101  agcccgcatg  accgcctgg  gtttgatgcc  catcgccacc  agccacggac
22151  tggccctgtt  cgatgccgcc  ctcgccaccg  gacagccgt  ttcgataccc
22201  gccccgatca  acacccacac  cctggcccga  cacgcccgcg  acaacaccct
22251  ggccccgatc  ctgtctgcgc  tgatcaccac  accacggcgc  cgggcggcct
22301  ctgccgcaac  cgatctcgct  gcccgcctca  acggacttag  cccccaacag
22351  caacaacaaa  cactggccac  cctcgtggcc  gcggccaccg  ccaccgtgct
22401  gggccaccac  accccgaaa  gcatcagccc  agccaccgcg  ttcaaagacc
22451  tcggaatcga  ttcgctgacc  gcccttgaac  tgcgcaacac  cctcacccac
22501  aacaccggcc  tggatctgcc  ccccaccctc  atcttcgatc  accccacacc
22551  caccgcgcta  acccaacacc  tgcacacccg  actcaccacc  ggtgccctgg
22601  tgccggctcc  ggtggtgatc  gcagctggtc  gtaccgagga  gccggtggcg
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FIGURE 6(continued)

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22 651  gtggtgggga  tggcgtgtcg  tttccccggt  ggtgtcgcat  cagcggatca
22 701  gttgtgggac  ttggtgatcg  ctggccgtga  tgtggtgggt  aattttccgg
22 751  ccgatcgggg  ttgggatgtg  gagggactgt  ttgatcccga  tccggacgcg
22 801  gtcggcaaaa  cctacacccg  ttacggcgcg  ttccttgacg  atgcggcagg
22 851  ttttgatgcc  gggttctttg  ggatctctcc  acgggaggca  cgcgcgatgg
22 901  accccagca  gcggctgctg  ctggaggtgt  gctgggaagc  gctagaaacc
22 951  gcgggtattc  ccgcgcacac  cttggccggc  acctccaccg  gggtattcgt
23 001  cggagcctgg  gcccagtcct  acggcgccac  caactccgat  gacgctgagg
23 051  ggtatgcgat  gaccggcggc  gcgatcagcg  tcatgtccgg  ccgtatcgcc
23 101  tacaccttgg  gcctagaagg  tccagcgatc  accgttgaca  ccgcctgctc
23 151  gtcatcgctg  gtggcaattc  acctggcctg  ccaatcctta  cgcaacaacg
23 201  aatcccagct  agcactggcc  ggcggcgtca  ccgtgatgag  cacacctgcg
23 251  gttttcaccg  atttctcccg  ccaacgcggc  ctggccccag  atggacgctg
23 301  caaagccttc  gccgctaccg  ccgatggcac  cggctttggt  gaaggcgccg
23 351  cggtcttggt  ccttgaacgg  ctctccgagg  cccgccgcaa  caaccacccg
23 401  gtccttgcga  tcgtcgctgg  atcggcgatc  aaccaagacg  gcgcatccaa
23 451  cggactgacc  gcaccccacg  gcccgtcaca  acaacgcgtc  atcaaccaag
23 501  cactagccaa  cgccggcctc  acccacgacc  aggtcgacgc  cgtcgaagcc
23 551  cacggcaccg  gcaccacact  gggtgacccc  atcgaagccg  gcgccctaca
23 601  cgccacctac  ggccaccacc  acacgcccga  tcaaccgctt  tggctgggat
23 651  ccatcaaatc  caacatcggc  cacacccaag  ccgccgccgg  cgccgccggt
23 701  gtggtcaaga  tgatccaagc  catcacccac  gccaccttgc  ccgccacctt
23 751  gcacgtcgac  caacccagcc  cccacatcga  ctggtccagc  ggcacagtcc
23 801  gactcctaac  cgagcccatc  caatggccca  acaccgacca  cccccgcacc
23 851  gcggcggtgt  cctcattcgg  catcagcggc  accaacgccc  acctcatcct
23 901  ccaacaaccc  cccacccccg  acaccacaca  aacccccaac  accacaacag
23 951  gttctgatcc  cgcagtgggt  tctgatcccg  cagtgggtgt  actggtgtgg
24 001  ccgttgtcag  cgcgttcagc  gccggggtta  agcgcacaag  cggcccgtct
24 051  gtaccagcat  ctcagcgccc  accccgatct  ggatccgatc  gatgtagccc
24 101  acagcctggc  taccacacgc  agccaccacc  cccaccgcgc  caccatcacc
24 151  accagcattg  agcaccacag  cgaaaacaac  cacgacacaa  ccgatgcgct
24 201  ggccgcactg  cacgccctgg  ccaacaacgg  cacacacccc  ctgctgagca
24 251  gaggcctgct  gaccccacag  ggccccggca  aaacagtgtt  cgtgttcccc
24 301  ggacagggca  gtcaataccc  cggcatgggc  gcagatctct  accgccaatt
24 351  ccccgtgttc  gcccacgccc  tcgacgcatg  cgacgcagcg  ttacagcctt
24 401  tcactggatg  gtcggtgcta  gctgtgttac  acgacgaacc  cgaggccccg
24 451  tcgttggagc  gggtcgatgt  ggtccagcct  gtgttgttct  cggtgatggt
24 501  gtcgttagcc  gcactctggc  ggtgggccgg  aatcaccccc  gatgcagtca
24 551  tcggccactc  ccagggcgag  atcgccgcgg  cacatgtggc  cggagccctg
24 601  accttgcccg  aagcagctgc  ggtagtggct  ttgcgcagcc  gtgtcttgac
24 651  cgacctggcc  ggtgccggtg  ccatggcttc  agtgctatcg  cccgaggaac
24 701  cactgaccca  gctgctggca  cggtgggacg  gcaagatcac  tgtcgccgca
24 751  gttaacggcc  ccgctagcgc  tgtggtctcc  ggcgatacca  cagcgatcac
24 801  cgaattgctg  attacctgcg  aacacgaaaa  catcgacgct  cgcgctatcc
24 851  cggtggacta  cccctctcat  tcccctata  tggaacacat  ccgccatcag
24 901  ttcctcgacg  agctacccga  gctgacaccg  cggccatcaa  ccatcgcgat
24 951  gtattccacc  gtcgacggcg  aacctcacga  caccgcctac  gacaccacca
25 001  caatgaccgc  ggactactgg  taccgcaaca  tccgtaacac  tgtccggttc
25 051  catgacactg  tcgctgccct  gctcggggcg  ggtgagcagg  ttttcctgga
25 101  actttcacct  cacccggtgt  tgacacaagc  gatcaccgac  accgtcgaac
25 151  aagccggcgg  cggcggcgca  gcagtgccag  ctctacgcaa  ggatcgccct
25 201  gatgctgtcg  cgttcgctgc  agcactcggc  cagctgcact  gccatggcat
25 251  cagcccatcc  tggaatgttc  tttactgcca  ggcccgcccc  ctcacactgc
25 301  ccacctacgc  tttccagcat  cagcgttact  ggctgctgcc  caccgctggt
25 351  gatttcagcg  gggccaatac  ccacgccatg  catccgctgc  tagacaccgc
25 401  caccgaactg  gccgaaaacc  gcggatgggt  gttcaccggc  cggatcagcc
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FIGURE 6(continued)

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25451 cacgcaccca accatggcta aacgaacacg ccgtcgaatc agccgtgctg
25501 ttcccaggca ccggatttgt cgagctagcg ctgcatgtcg ctgaccgtgc
25551 cggatattcc tcggtcaacg aactgatcgt gcacacccccc ctgctactcg
25601 ctggccacga caccgcggat ctacagatca ccgtcaccga caccgatgac
25651 atgggccggc agtctcttaa catccactcg cacccacata tcggccatga
25701 caacaccacc accggcgatg aacaacccga gtgggtcctg catgccagcg
25751 cagtcctgac cgcacaaacc accgaccaca accacctccc cctaacgcct
25801 gtgccgtggc ctccacccgg cacagccgcg atcgaggtgg atgacttcta
25851 cgacgacctg gctgcacagg gctacaacta cggcccgaca ttccaaggtg
25901 tgcaacggat atggcgtgac cacgccacac ccgatgtcat ctacgccgaa
25951 gttgaactac ccgaagacac cgacatcgac ggctacggca tccacccccgc
26001 cctattcgac gccgctttac accccctact cgccctgacc caaccccccca
26051 ccaacgacac cgatgacacc aacaccgcag acaccggtga ccaggtgcgg
26101 ctgccctacg cctttaccgg catcagtttg cacgccaccc acgccacccg
26151 attgcgggta cggctgaccc gtaccggcgc cgatgccatc accgtgcaca
26201 ccagtgacac caccggagcc ccggtggcga tcatcgactc attgatcacc
26251 cgccccctca ccaccgccac agggtctgct ccggcaacca cagcagctgg
26301 cctactacac ctgagctggc caccacaccc tgacaccacg accgacaccg
26351 acaccgacac cgatgccctg cggtatcagg tgatcgccga acccactcaa
26401 caactgccccc gctacctgca cgacctacac accagcaccg acctgcacac
26451 cagcaccacc gaagcagacg tggttgtgtg gccggtaccg gtgcccagca
26501 acgaagagct ccaggcacac caagcatccg acaccgcggt gtcttctcgg
26551 atacacaccc tgacccgcca aacacttacc gtggtgcagg actggctcac
26601 tcaccccgac accaccggca cccgactggt catcgtgacc cgccacggcg
26651 tcagcaccag tgcccacgac ccggtcccccg acctagccca cgccgcagtg
26701 tggggcctga tccgcagcgc ccaaaacgaa caccccggac gcttcacact
26751 gctcgacacc gacgacaaca ccaacagcga caccctcacc accgccctaa
26801 ccctgccaac ccgcgaaaac caactggcca tacgccgcga caccatccac
26851 atccccccgcc tgacccgcac cgctgtcctg acaccaccgg acagcggccc
26901 ctggcgcctt gacaccaccg gcaagggtga tctggccaac ctcgccctgc
26951 taccgaccgc ccacactgcc ctggcctctg gacaaatccg tatcgatgtc
27001 cgggccgctg gtttgaattt tcacgacgtg gtcgtcgcgt tggggctaat
27051 ccccgacgac ggattcggcg gagaagccgc cggggtgatc agcgagatcg
27101 gtcccgacgt ctacggattc gccgtgggtg atgccgtgac cggcatgacc
27151 gtctctggtg cgtttgcccc cagcactgtc gctgatcacc gcatggtgat
27201 gacgatcccg gcccggtggt ccttcccccca agccgcatcc ataccggtgg
27251 tattcctgac cgcctacatc gctttggccg agatctcggg cctaagccga
27301 gggcaacgag tgctgatcca tgccggcact ggcggtgtgg gtatggctgc
27351 gattcaattg gcacaccatt tgggtgccga agtattcgcc accgccagcg
27401 ccgcgaaatg gagcaccctt gaggcactgg gggtaccgcg cgaccatatc
27451 gcttcctcgc gtactctgga ctttttccaac gcattcctcg atgccaccaa
27501 cggcgccggt gttgatgtcg tattgaactg cctcagtggt gaattcgtcg
27551 aagcatccct agccctgctg ccccgcggtg gccatttcgt cgaaatcggc
27601 aaaaccgaca tccgtgatac cgaggtcatc gccgcaaccc atccggcgt
27651 catttaccgc gccctcgatc tgctcagcgt ctcccccgat cacatccagc
27701 gcacactggc ccaactgtcc ccactgtttg ccaccgacac cctaaaaccc
27751 ctaccgacca ctaattacag catctaccaa gccatctcgg ccttacgtga
27801 catgagtcaa gcccgtcaca caggcaagat cgtgctcact gcgccggtgg
27851 tggtagatcc tgagggcacg gtgttgatca ccgggggggac cgggacgctg
27901 ggtgccttgt cgccgagca tctggtttct gcccatggtg tccggcatct
27951 gttgttgacc tcgcggcgcg gacctcaggc ccacggtgcc accgatctgc
28001 agcagcggct caccgatcta ggtgctcatg tcaccatcac ggcctgcgat
28051 atcagcgacc ccgaagcact ggccgccctg gtcaattcag tgcccacaca
28101 acaccgttta accgcggtag tgcacaccgc cgcggtattg ccgacaccc
28151 cggtcaccga gttgaccggc gatcaactcg accaggtgct ggcccccaaa
28201 atcgacgcgg catggcagct gcaccaactc acctacgaac acaacctgtc
28251 tgcattcatc atgttctcgt ccatggccgg aatgataggc agtcccggtc
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FIGURE 6(continued)

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28301 agggtaacta cgcggcagcc aacaccgcgt tagatgctct cgccgactac
28351 cgccaccgcc tgggcttgcc cgcgaccagc ctggcctggg gctactggca
28401 gactcacacc ggtctcaccg cgcatctaac cgatgtagat ctagcccgca
28451 tgacccgcct gggtttgatg cccatcgcca ccagccacgg actggccctg
28501 ttcgatgccg ccctcgccac cggacagccc gtttcgatac ccgccccgat
28551 caacacccac accctggccc gacacgcccg cgacaacacc ctggccccga
28601 tcctgtctgc gctgatcacc acaccacggc gccgggcggc ctctgccgca
28651 accgatctcg ctgcccgcct caacggactt agcccccaac agcaacaaca
28701 aacactggcc accctcgtgg ccgcggccac cgccaccgtg ctgggccacc
28751 acacccccga aagcatcagc ccagccaccg cgttcaaaga cctcggaatc
28801 gattcgctga ccgcccttga actgcgcaac accctcaccc acaacaccgg
28851 cctcaacctt tcgtccactc ttatcttcga tcaccccaca ccccatgcgg
28901 tggccgagca tctgcttgaa cagatccctg gcatcggtgc cctggtgccg
28951 gctccggtgg tgatcgcagc tggtcgtacc gaggagccgg tggcggtggt
29001 ggggatggcg tgtcgtttcc ccggtggtgt cgcatcagcg gatcagttgt
29051 gggacttggt gatcgctggc cgtgatgtgg tgggtaattt tccggccgat
29101 cggggttggg atgtggaggg actgtttgat cccgatccgg acgcggtcgg
29151 caaaacctac acccgttacg gcgcgttcct tgacgatgcg gcaggttttg
29201 atgccgggtt ctttgggatc tctccacggg aggcacgcgc gatggacccc
29251 cagcagcggc tgctgctgga ggtgtgctgg gaagcgctag aaaccgcggg
29301 tattcccgcg cacaccttgg ccggcacctc caccggggta ttcgtcggag
29351 ccggggccca gtcctacggc gccaccaact ccgatgacgc tgaggggtat
29401 gcgatgaccg gcggcgcgac tagcgtcatg tccggccgta tcgcctacac
29451 cttgggccta gaaggtccag cgatcaccgt tgacaccgcc tgctcgtcat
29501 cgctggtggc aattcacctg gcctgccaat ccttacgcaa caacgaatcc
29551 cagctagcac tggccggcgg cgtcaccgtg atgagcacac ctgcggtttt
29601 caccgagttc tcccgccaac gcggcctggc cccagatgga cgctgcaaag
29651 ccttcgccgc taccgccgat ggcaccggct ttggtgaagg cgccgcggtc
29701 ttggtccttg aacggctctc cgaggcccgc cgcaacaacc acccggtcct
29751 tgcgatcgtc gctggatcgg cgatcaacca agacggcgca tccaacggac
29801 tgaccgcacc ccacggcccg tcacaacaac gcgtcatcaa ccaagcacta
29851 gccaacgccg gcctcaccca cgaccaggtc gacgccgtcg aagcccacgg
29901 caccggcacc acactgggtg accccatcga agccggcgcc ctacacgcca
29951 cctacggcca ccaccacacg cccgatcaac cgctttggct gggatccatc
30001 aaatccaaca tcggccacac ccaagccgcc gccggcgccg ccggtgtggt
30051 caagatgatc caagccatca cccacgccac cttgcccgcc accttgcacg
30101 tcgaccaacc cagcccccac atcgactggt ccagcggcac agtccgactc
30151 ctaaccgagc ccatccaatg gcccaacacc gaccaccccc gcaccgcggc
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30251 aaccccccac ccctaacccc acacaaaccc ccgaggactg cagccccgca
30301 caatctccct gcgcaacaat caccgatgca ggcacgggat tatcgtttgt
30351 gccctgggtg atttcagcga agtcggctga ggcgttgtct gcgcaggcga
30401 gccgattgtt gacgcgcctt gacgatgatc cagttgtcga tgcaatcgac
30451 ctggggtggt cattgatagc cactcgatcg atgtttgagc atcgcgcagt
30501 agttgtgggt gcggatcgtc accagttgca gcgcgggttg ccgagttgg
30551 cttctggtaa cttggcgcc gatgtagtgg tgggccgggc ccgcgcagcg
30601 ggcgagactg taatggtgtt tcccggtcag ggatcacagc ggttgggcat
30651 gggcgcgcag ctttatgaac aattcccggt attcgcggcg gcgtttgatg
30701 acgttgttga tgcgctggac cagtatctgc ggttgccgct acgccaagtt
30751 atgtggggtg acgatgaagg cctgctcaat tcaacggagt tcgcccagcc
30801 gtcgttgttt gctgtcgagg tcgcactgtt tgcgttgctg cgcttctggg
30851 gtgtcgttcc ggattacgtg ataggccatt cggtaggaga gctggccgct
30901 gcacaagtgg ctggcgtttt gagcctgcag gacgcggcta aattagtttc
30951 agcgcgtggc cgactgatgc aggccctgcc cgccggtgga gcgatggtcg
31001 cggtagccgc cagccagcat gaagtcgagc ctttgctggt tgaagggtc
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FIGURE 6(continued)

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31051 gatatcgcgg cgctcaatgc gccagggtca gttgtgatct ctggtgatca
31101 ggcggcagtc cgtttgatcg ctaatcgatt ggcggatagg ggctacaggg
31151 cgcacgaact tgcggtttcg catgcctttc attcatcgtt gatggagccg
31201 atgttggagg agttcgctcg gctcgcttct gaaatcgttg tggagcaacc
31251 gcagattcca ctgatttcga acgtgactgg tcagctggcc aacgccgact
31301 acgggtcggc aggttactgg gtggaccaca tccgccgtcc agtccgtttc
31351 gccgatagtg tcgcttcgtt ggaagccatg ggggctagct gcttcattga
31401 agtcggtcca gccagcgggt tgggcgcagc tatcgagcaa tccttgaaat
31451 ctgccgagcc gaccgtgtca gtgtcggcac tgtccaccga taaacctgaa
31501 tccgtcgccg tattgcgcgc tgcagcacga ctttccacct ccggcattcc
31551 tgtggattgg cagtcggtgt cgacggccg cagcacccag acagttaacc
31601 tgcccaccta cgccttccag cggcaacggt tctggctcga cgccaaccgt
31651 atcggtcaag gcgatcccgc cagtcaacca caggcccaga acgttgaatc
31701 ccgttttttgg gaggcggtcg agcgggaaga cgttgatggc ttggctgatt
31751 ctataggtgt caccgccagt gccatgcaga ccgtgctacc tgcattgtct
31801 tcatggcgtc gcgcggagcg cacacagtcc gagcttgatt cctggcgcta
31851 tcaggtgaca tggctgtctt ccccagcaac gccgagttcg atcacgctgt
31901 ccggcatttg gttgctgata gttccaagcg aacttgcaaa gactgaccca
31951 gtaattggat gtgctgcagc gctcgaagcg cacggcgcct tagtcacgat
32001 tatcacaatt ttcgagccgg acttcaatcg ctcattgatg ggcgcttccc
32051 taaaagatat cggttcacac atatctggtg tcatatcgtt cttagggatt
32101 cacgggtccg aattctccga tagcggcgcg gtcaagacat taaatcttgt
32151 gcaagcaatg ggcgatgtcc acttagacgt tcctttgtgg tgcctaacgc
32201 agggcgcggt atcgatcagc gccgacgatt tgatccgatg ctcgtcagca
32251 gccctggtgt ggggtctggg gagagtcgtc gcattagagc acccgggatc
32301 gtggggtggc ttagtagacc tccccgagtc acccgacgat gcagcatggg
32351 agcgcttgtg cgccctcctc gcgcagccga cggatgaaga tcagtttgcg
32401 atcaggccgt ctgggttttt cctacggaga ttgatccacg ccccggcaac
32451 cacgacatcc aaatcctcga ccgcgtgggc tccgagggg accgtgttaa
32501 tcacaggcgg cacaggcgcg ttaggcgcac acgtcgcaag gtggttggcc
32551 cacaaatatg aatcggtaga tttgctctta accagccgtc gcgggatggc
32601 agccgatgga gctacagagc tagtggatga cctccgcacg gctggcgcca
32651 gtgtgacagt gcacgcctgc gacgtgacag accgcacttc agtcgaggct
32701 gcaatagcag gtaaatccct tgatgcggtc tttcatcttg caggacgaca
32751 ccagccaact ctgctaacag aactcgagga cgaatccttt agtgacgaat
32801 tggcgccgaa ggttcacggt gcccaagtat tgagtgacat cacgtctaac
32851 ctcacactat cagcgtttgt catgttctcg tcagtagccg gaatctgggg
32901 cggcaaaagt caaggcgcat atgctgccgc taacgcattc ttagattcgc
32951 tcgccgagaa acggcgcacg ttggggttac cagcaacatc ggtcgcttgg
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33051 aaaccttatt ggcttgaaat cgatgtcagc agatttagct gtgcaggcgc
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33151 aactgggatc ggttctaccc cacattcgct ttggcgcgac cgaggccctt
33201 cctacacgaa atcacagagg taatggctta ccgcgagtcg atgcgctcaa
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33451 ctccaaactg cgaccggcct caacctttcg tccactctta tcttcgatca
33501 ccccacaccc catgcggtgg ccgagcatct gcttgaacag atccctggca
33551 tcggtgccct ggtgccggct ccggtggtga tcgcagctgg tcgtaccgag
33601 gagccggtgg cggtggtggg gatggcgtgt cgtttccccg gtggtgtcgc
33651 atcagcggat cagttgtggg acttggtgat cgctggccgt gatgtggtgg
33701 gtaattttcc ggccgatcgg ggttgggatg tggagggact gtttgatccc
33751 gatccggacg cggtcggcaa aacctacacc cgttacggcg cgttccttga
33801 cgatgcggca ggttttgatg ccgggttctt tgggatctct ccacgggagg
33851 cacgcgcgat ggacccccag cagcggctgc tgctggaggt gtgctgggaa
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FIGURE 6(continued)

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33901 gcgctagaaa ccgcgggtat tcccgcgcac accttggccg gcacctccac
33951 cggggtattc gccggagcct gggcccagtc ctacggcgcc accaactccg
34001 atgacgctga ggggtatgcg atgaccggcg gctcgactag cgtcatgtcc
34051 ggccgtatcg cctacacctt gggcctagaa ggtccagcga tcaccgttga
34101 caccgcctgc tcgtcatcgc tggtggcaat tcacctggcc tgccaatcct
34151 tacgcaacaa cgaatcccag ctagcactgg ccggcggcgt caccgtgatg
34201 agcacacctg cgattttcac cgagttctcc cgccaacgcg gcctggcccc
34251 agatggacgc tgcaaagcct tcgccgctac cgccgatggc accggctttg
34301 gtgaaggcgc cgcggtcttg gtccttgaac ggctctccga ggcccgccgc
34351 aacaaccacc cggtccttgc gatcgtcgct ggatcggcga tcaaccaaga
34401 cggcgcatcc aacggactga ccgcaccca cggcccgtca caacaacgcg
34451 tcatcaacca agcactagcc aacgccggcc tcacccacga ccaggtcgac
34501 gccgtcgaag cccacggcac cggcaccaca ctgggtgacc ccatcgaagc
34551 cagcgcccta cacgccacct acggccacca ccacacgccc gatcaaccgc
34601 tttggctggg atccatcaaa tccaacatcg gccacaccca agccgccgcc
34651 ggcgccgccg gtgtggtcaa gatgatccaa gccatcaccc acgccacctt
34701 gcccgccacc ttgcacgtcg accaacccag cccccacatc gactggtcca
34751 gcggcacagt ccgactccta accgagccca tccaatggcc caacaccgac
34801 cacccccgca ccgcggcggt gtcctcattc ggcatcagcg gcaccaacgc
34851 ccacctcatc ctccaacaac cccccacccc cgacaccaca caaaccccca
34901 acaccacaac aggttctgat cccgcagtgg gttctgatcc cgcagtgggt
34951 gtactggtgt ggccgttgtc agcgcgttca cgcccggggt taagcgcaca
35001 agcggcccgt ctgtaccagc atctcagcgc ccaccccgat ctggatccga
35051 tcgatgtagc ccacagcctg gctaccacac gcagccacca ccccaccgc
35101 gccaccatca ccaccagcat tgagcaccac agcgaaaaca accacgacac
35151 aaccgatgcg ctggccgcac tgcacgccct ggccaacaac ggcacacacc
35201 ccctgctgag cagaggcctg ctgacccac agggccccgg caaaacagtg
35251 ttcgtgttcc ccggacaggg cagtcaatac cccggcatgg gcgcagatct
35301 ctaccgccaa ttccccgtgt tcgcccacgc cctcgacgca tgcgacgcag
35351 cgttacagcc tttcactgga tggtcggtgc tagctgtgtt acacgacgaa
35401 cccgaggccc cgtcgttgga gcgggtcgat gtggtccagc ctgtgttgtt
35451 ctcggtgatg gtgtcgttag ccgcactctg gcggtgggcc ggaatcaccc
35501 ccgatgcagt catcggccac tcccagggcg agatcgccgc ggcacatgtg
35551 gccggagccc tgaccttgcc cgaagcagct gcggtagtgg ctttgcgcag
35601 ccgtgtcttg accgacctgg ccggtgccgg tgccatggct tcagtgctat
35651 cgcccgagga accactgacc cagctgctgg cacggtggga cggcaagatc
35701 actgtcgccg cagttaacgg ccccgctagc gctgtggtct ccggcgatac
35751 cacagcgatc accgaattgc tgattacctg cgaacacgaa aacatcgacg
35801 ctcgcgctat cccggtggac taccctctc attcccccta tatggaacac
35851 atccgccatc agttcctcga cgagctaccc gagctgacac cgcggccatc
35901 aaccatcgcg atgtattcca ccgtcgacgg cgaacctcac gacaccgcct
35951 acgacaccac cacaatgacc gcggactact ggtaccgcaa catccgtaac
36001 actgtccggt tccatgacac tgtcgctgcc ctgctcgggg cgggtgagca
36051 ggttttcctg gaactttcac ctcacccggt gttgacacaa gcgatcaccg
36101 acaccgtcga acaagccggc ggcggcggcg cagcagtgcc agctctacgc
36151 aaggatcgcc ctgatgctgt cgcgttcgct gcagcactcg ccagctgca
36201 ctgccatggc atcagcccat cctggaatgt tctttactgc caggcccgcc
36251 ccctcacact gcccacctac gctttccagc atcagcgtta ctggctgctg
36301 cccaccgctg gtgatttcag cggggccaat acccacgcca tgcatccgct
36351 gctagacacc gccaccgaac tggccgaaaa ccgcggatgg gtgttcaccg
36401 gccggatcag cccacgcacc caaccatggc taaacgaaca cgccgtcgaa
36451 tcagccgtgc tgttcccagg caccggattt gtcgagctag cgctgcatgt
36501 cgctgaccgt gccggatatt cctcggtcaa cgaactgatc gtgcacaccc
36551 ccctgctact cgctggccac gacaccgcgg atctacagat caccgtcacc
36601 gacaccgatg acatgggccg gcagtctctt aacatccact cgcacccaca
36651 tatcggccat gacaacacca ccaccggcga tgaacaaccc gagtgggtcc
36701 tgcatgccag cgcagtcctg accgcacaaa ccaccgacca caaccacctc
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FIGURE 6(continued)

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36751 cccctaacgc ctgtgccgtg gcctccaccc ggcacagccg cgatcgaggt
36801 ggatgacttc tacgacgacc tggctgcaca gggctacaac tacggcccga
36851 cattccaagg tgtgcaacgg atatggcgtg accacgccac acccgatgtc
36901 atctacgccg aagttgaact acccgaagac accgacatcg acggctacgg
36951 catccacccc gccctattcg acgccgcttt acaccccta ctcgccctga
37001 cccaaccccc caccaacgac accgatgaca ccaacaccgc agacaccggg
37051 gaccaggtgc ggctgcccta cgcctttacc ggcatcagtt tgcacgccac
37101 ccacgccacc cgattacggg tacggctgac ccgtaccggc gccgatgcca
37151 tcaccgtgca caccagtgac accaccggag ccccggtggc gatcatcgac
37201 tcattgatca cccgcccct caccaccgcc acagggtctg ctccggcaac
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37301 cgaccgacac cgacaccgac accgatgccc tgcggtatca ggtgatcgcc
37351 gaacccactc aacaactgcc ccgctacctg cacgacctac acaccagcac
37401 caccgaagca gacgtggttg tgtggccggt accggtgccc agcaacgaag
37451 agctccaggc acaccaagca tccgacaccg cggtgtcttc tcggatacac
37501 accctgaccc gccaaacact taccgtggtg caggactggc tcactcaccc
37551 cgacaccacc ggcacccgac tggtcatcgt gacccgccac ggcgtcagca
37601 ccagtgccca cgacccggtc cccgacctag cccacgccgc agtgtggggc
37651 ctgatccgca gcgcccaaaa cgaacacccc ggacgcttca cactgctcga
37701 caccgacgac aacaccaaca gcgacaccct caccaccgcc ctaaccctgc
37751 caacccgcga aaaccaactg gccatacgcc gcgacaccat ccacatcccc
37801 cgcctgaccc gacacagcag tgacggtgcg ctcactgcgc cggtggtggt
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37901 ccttgttcgc cgagcatctg gtttctgccc atggtgtccg gcatctgttg
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38001 gcggctcacc gatctaggtg ctcatgtcac catcacggcc tgcgatatca
38051 gcgaccccga agcactggcc gccctggtca attcagtgcc cacacaacac
38101 cgtttaaccg cggtagtgca caccgccgcg gtattggccg acaccccggt
38151 caccgagttg accggcgatc aactcgacca ggtgctggcc cccaaaatcg
38201 acgcggcatg gcagctgcac caactcacct acgaacacaa cctgtctgca
38251 ttcatcatgt tctcgtccat ggccggaatg ataggcagtc ccggtcaggg
38301 taactacgcg gcagccaaca ccgcgttaga tgctctcgcc gactaccgcc
38351 accgcctggg cttgcccgcg accagcctgg cctggggcta ctggcagact
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38451 ccgcctgggt ttgatgccca tcgccaccag ccacggactg gccctgttcg
38501 atgccgccct cgccaccgga cagcccgttt cgatacccgc cccgatcaac
38551 acccacaccc tggcccgaca cgcccgcgac aacaccctgg ccccgatcct
38601 gtctgcgctg atcaccacac cacggcgccg ggcggcctct gccgcaaccg
38651 atctcgctgc ccgcctcaac ggacttagcc cccaacagca acaacaaaca
38701 ctggccaccc tcgtggccgc ggccaccgcc accgtgctgg gccaccacac
38751 ccccgaaagc atcagcccag ccaccgcgtt caaagacctc ggaatcgatt
38801 cgctgaccgc ccttgaactg cgcaacaccc tcacccacaa caccggcctg
38851 gatctgcccc ccaccctcat cttcgatcac cccacacccc atgcggtggc
38901 cgagcatctg cttgaacaga tccctggcat cggtgccctg gtgccggctc
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39301 cccgcgcaca ccttggccgg cacctccacc ggggtattcg ccggagcctg
39351 ggcccagtcc tacggcgcca ccaactccga tgacgctgag gggtatgcga
39401 tgaccggcgg ctcgactagc gtcatgtccg gccgtatcgc ctacaccttg
39451 ggcctagaag gtccagcgat caccgttgac accgcctgct cgtcatcgct
39501 ggtggcaatt cacctggcct gccaatcctt acgcaacaac gaatcccagc
39551 tagcactggc cggcggcgtc accgtgatga gcacacctgc ggttttcacc
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                                    FIGURE 6(continued)

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39601 gagttctccc gccaacgcgg cctggcccca gatggacgct gcaaagcctt
39651 cgccgctacc gccgatggca ccggctttgg tgaaggcgcc gcggtcttgg
39701 tccttgaacg gctctccgag gcccgccgca acaaccaccc ggtccttgcg
39751 atcgtcgctg gatcggcgat caaccaagac ggcgcatcca acggactgac
39801 cgcaccccac ggcccgtcac aacaacgcgt catcaaccaa gcactagcca
39851 acgccggcct cacccacgac caggtcgacg ccgtcgaagc ccacggcacc
39901 ggcaccacac tgggtgaccc catcgaagcc agcgccctac acgccaccta
39951 cggccaccac cacacgcccg atcaaccgct ttggctggga tccatcaaat
40001 ccaacatcgg ccacacccaa gccgccgccg gcgccgccgg tgtggtcaag
40051 atgatccaag ccatcacccc acgccaccttg cccgccacct tgcacgtcga
40101 ccaacccagc ccccacatcg actggtccag cggcacagtc cgactcctaa
40151 ccgagcccat ccaatggccc aacaccgacc accccgcac cgcggcggtg
40201 tcctcattcg gcatcagcgg caccaacgcc cacctcatcc tccaacaacc
40251 ccccacccc gacaccacac aaacccccaa caccacaaca ggttctgatc
40301 ccgcagtggg ttctgatccc gcagtgggtg tactggtgtg gccgttgtca
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40451 ctaccacacg cagccaccac ccccaccgcg ccaccatcac caccagcatt
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40551 gcacgccctg gccaacaacg gcacacaccc cctgctgagc agaggcctgc
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40651 agtcaatacc ccggcatggg cgcagatctc taccgccaat tccccgtgtt
40701 cgcccacgcc ctcgacgcat gcgacgcagc gttacagcct ttcactggat
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40851 cgcactctgg cggtgggccg gaatcacccc cgatgcagtc atcggccact
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41701 ggggccaata cccacgccat gcatccgctg ctagacaccg ccaccgaact
41751 ggccgaaaac cgcggatggg tgttcaccgg ccggatcagc ccacgcaccc
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41851 accggatttg tcgagctagc gctgcatgtc gctgaccgtg ccggatattc
41901 ctcggtcaac gaactgatcg tgcacacccc cctgctgctc gctggccacg
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42051 caccggcgat gaacaacccg agtgggtcct gcatgccagc gcagtcctga
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42151 cctccacccg gcacagccgc gatcgaggtg gatgacttct acgacgacct
42201 ggctgcacag ggctacaact acggcccgac attccaaggt gtgcaacgga
42251 tatggcgtga ccacgccaca cccgatgtca tctacgccga agttgaacta
42301 cccgaagaca ccgacatcga cggctacggc atccaccccg ccctattcga
42351 cgccgcttta caccccctac tcgccctgac ccaaccccccc accaacgaca
42401 ccgatgacac caacaccgca gacaccggtg accaggtgcg gctgccctac
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FIGURE 6(continued)

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42451 gcctttaccg gcatcagttt gcacgccacc cacgccaccc gattacgggt
42501 acggctgacc cgtaccggcg ccgatgccat caccgtgcac·accagtgaca
42551 ccaccggagc cccggtggcg atcatcgact cattgatcac ccgcccctc
42601 accaccgcca cagggtctgc tccggcaacc acagcagctg gcctactaca
42651 cctgagctgg ccaccacacc ctgacaccac gaccgacacc gacaccgaca
42701 ccgatgccct gcggtatcag gtgatcgccg aacccactca acaactgccc
42751 cgctacctgc acgacctaca caccagcacc gacctgcaca ccagcaccac
42801 cgaagcagac gtggttgtgt ggccggtacc ggtgcccagc aacgaagagc
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42901 ctgacccgcc aaacacttac cgtggtgcag gactggctca ctcaccccga
42951 caccaccggc·acccgactgg tcatcgtgac ccgccacggc gtcagcacca
43001 gtgcccacga cccggtcccc gacctagccc acgccgcagt gtggggcctg
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43101 cgacgacaac accaacagcg acaccctcac caccgcccta accctgccaa
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43201 ctgacccgca ccgctgtcct gacaccaccg gacagcggcc cctggcgcct
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43751 ggagcaccct tgaggcactg ggggtaccgc gcgaccatat cgcttcctcg
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43851 tgttgatgtc gtattgaact gcctcagtgg tgaattcgtc gaagcatccc
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44901 caccctggcc cgacacgccc gcgacaacac cctgaccccg atcctgtctg
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45101 aaagcatcag cccagccacc gcgttcaaag acctcggaat cgattcgctg
45151 accgcccttg aactgcgcaa caccctcacc cacaacaccg gcctggatct
45201 gcccccacc ctcatcttcg atcaccccac acccaccgcg ctaacccaac
45251 acctgcacac ccgactcacc accggtgccc tggtgccggc tccggtggtg
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FIGURE 6(continued)

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45301 atcgcagctg gtcgtaccga ggagccggtg gcggtggtgg ggatggcgtg
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45401 tcgctggccg tgatgtggtg ggtaattttc cggccgatcg gggttgggat
45451 gtggcgggac tgtttgatcc cgatccggac gcggtcggca aaacctacac
45501 ccgttacggc gcgttccttg acgatgcggc aggttttgat gccgggttct
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45601 ctgctggagg tgtgctggga agcgctagaa accgcgggta ttcccgcgca
45651 caccttggcc ggcacctcca ccggggtatt cgtcggagcc ggggcccagt
45701 cctacggcgc caccaactcc gatgacgctg aggggtatgc gatgaccggc
45751 ggcgcgatca gcgtcatgtc cggccgtatc gcctacacct tgggcctaga
45801 aggtccagcg atcaccgttg acaccgcctg ctcgtcatcg ctggtggcaa
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46201 ctcacccacg accaggtcga cgccgtcgaa gcccacggca ccggcaccac
46251 actgggtgac cccatcgaag ccggcgccct acacgccacc tacggccacc
46301 accacacgcc cgatcaaccg ctttggctgg gatccatcaa atccaacatc
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46401 agccatcacc cacgccacct gcccgccac cttgcacgtc gaccaaccca
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46551 cggcatcagc ggcaccaacg cccacctcat cctccaacaa cccccccaccc
46601 ccgacaccac acaaaccccc aaccccacaa caggttctga tcccgcagtg
46651 ggttctgatt ccgcagtggg ttctgatccc gcagtgggtg tactggtgtg
46701 gccgttgtca gcgcgttcag cgccggggtt aagcgcacaa gcggcccgtc
46751 tgtaccagca tctcagcgcc cacccccgatc tggatccgat cgatgtagcc
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46851 caccagcatt gagcaccaca gcgaaaacaa ccacgacaca accgatgcgc
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46951 agaggcctgc tgaccccaca gggccccggc aaaacagtgt tcgtgttccc
47001 cggacagggc agtcaatacc ccggcatggg cgcagatctc taccgccaat
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48101 ccaccgaact ggccgaaaac cgcggatggg tgttcaccgg ccggatcagc
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FIGURE 6(continued)

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48701 ccctattcga cgccgcttta cacccctac tcgccctgac ccaacccccc
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49301 ggctcactca ccccgacacc accggcaccc gactggtcat cgtgacccgc
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49601 cgccggtggt ggtagatcct gagggcacgg tgttgatcac cggggggacc
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49701 ccggcatctg ttgttgacct cgcggcgcgg acctcaggcc cacggtgcca
49751 ccgatctgca gcagcggctc accgatctag gtgctcatgt caccatcacg
49801 gcctgcgata tcagcgaccc cgaagcactg gccgccctgg tcaattcagt
49851 gcccacacaa caccgtttaa ccgcggtagt gcacaccgcc gcggtattgg
49901 ccgacacccc ggtcaccgag ttgaccggcg atcaactcga ccaggtgctg
49951 gcccccaaaa tcgacgcggc atggcagctg caccaactca cctacgaaca
50001 caacctgtct gcattcatca tgttctcgtc catggccgga atgataggca
50051 gtcccggtca gggtaactac gcggcagcca acaccgcgtt agatgctctc
50101 gccgactacc gccaccgcct gggcttgccc gcgaccagcc tggcctgggg
50151 ctactggcag actcacaccg gtctcaccgc gcatctaacc gatgtagatc
50201 tagcccgcat gacccgcctg ggtttgatgc ccatcgccac cagccacgga
50251 ctggccctgt tcgatgccgc cctcgccacc ggacagcccg tttcgatacc
50301 cgccccgatc aacacccaca ccctggcccg acacgcccgc gacaacaccc
50351 tggccccgat cctgtctgcg ctgatcacca caccacggcg ccgggcggcc
50401 tctgccgcaa ccgatctcgc tgcccgcctc aacggactta gcccccaaca
50451 gcaacaacaa acactggcca ccctcgtggc cgcggccacc gccaccgtgc
50501 tgggccacca caccccgaa agcatcagcc cagccaccgc gttcaaagac
50551 ctcggaatcg attcgctgac cgcccttgaa ctgcgcaaca ccctcaccca
50601 caacaccggc ctggatctgc cccccaccct catcttcgat caccccacac
50651 ccaccgcgct aacccaacac ctgcacaccc gactcacaca aattgagagc
50701 ccaaattccg aagactcgat gctgaacctt aaaaatttgg accgaattga
50751 atcatatatc ttcagaaatt cgggagaaga tcgagctcac gtaatcgcta
50801 atcgtttacg gtcaattctc tcgaaatggg atggcacccg tagtccagaa
50851 ttacctgcgg aactccatct tgaatcggca acagacgatg agctgttttc
50901 cctagcaaac atgtttcgca ctccaaccag cgaaatttca cctactctag
50951 aaggcggccg tggtgtcaac tga
```

FIGURE 6(continued)

MlsA2 gene
```
1     gtggtgtcaa ctgaagaaaa cctacgcgtt tacttaaaac aggtcatcac
51    agacctccac caaatgcagg cacgtctgcg gaagatcgaa aagcagagat
101   cagagcgggt ggcggtggtg gggatggcgt gtcgtttccc cggtggtgtc
151   gcatcagcgg atcagttgtg ggacttggtg atcgctggcc gtgatgtggt
201   gggtaatttt ccggccgatc ggggttggga tgtggaggga ctgtttgatc
251   ccgatccgga cgcggtcggc aaaacctaca cccgttacgg cgcgttcctt
301   gacgatgcgg caggttttga tgccgggttc tttgggatct ctccacggga
351   ggcacgcgcg atggaccccc agcagcggct gctgctggag gtgtgctggg
401   aagcgctaga aaccgcgggt attcccgcgc acaccttggc cggcacctcc
451   accggggtat tcgtcggagc ctgggcccag tcctacggcg ccaccaactc
501   cgatggcgct gagggggtatg cgatgaccgg cggctcgact agcgtcatgt
551   ccggccgtat cgcctacacc ttgggcctag aaggtccagc gatcaccgtt
601   gacaccgcct gctcgtcatc gctggtggca attcacctgg cctgccaatc
651   cttacgcaac aacgaatccc agctagcact ggccggcggc gtcaccgtga
701   tgagcacacc tgcggttttc accgagttct cccgccaacg cggcctggcc
751   ccagatggac gctgcaaagc cttcgccgct accgccgatg gcaccggctg
801   gggtgaaggc gccgcggtct tggtccttga acggctctcc gaggcccgcc
851   gcaacaacca cccggtcctt gcgatcgtcg ctggatcggc gatcaaccaa
901   gacggcgcat ccaacggact gaccgcaccc cacggcccgt cacaacaacg
951   cgtcatcaac caagcactag ccaacgccgg cctcacccac gaccaggtcg
1001  acgccgtcga agcccacggc accggcacca cactgggtga ccccatcgaa
1051  gccagcgccc tacacgccac ctacggccac caccacacgc ccgatcaacc
1101  gctttggctg ggatccatca aatccaacat cggccacacc caagccgccg
1151  ccggcgccgc cggtgtggtc aagatgatcc aagccatcac ccacgccacc
1201  ttgcccgcca ccttgcacgt cgaccaaccc agcccccaca tcgactggtc
1251  cagcggcaca gtccgactcc taaccgagcc catccaatgg cccaacaccg
1301  accacccccg caccgcggcg gtgtcctcat tcggcatcag cggcaccaac
1351  gcccacctca tcctccaaca accccccacc cccgacacca cacaaacccc
1401  caacaccaca acaggttctg atcccgcagt gggttctgat tccgcagtgg
1451  gttctgatcc cgcagtgggt gtactggtgt ggccgttgtc agcgcgttca
1501  gcgccggggt taagcgcaca agcggcccgt ctgtaccagc atctcagcgc
1551  ccaccccgat ctggatccga tcgatgtagc ccacagcctg gctaccacac
1601  gcagccacca cccccaccgc gccaccatca ccaccagcat tgagcaccac
1651  agcgaaaaca accacgacac aaccgatgcg ctggccgcac tgcacgccct
1701  ggccaacaac ggcacacacc ccctgctgag cagaggcctg ctgaccccac
1751  agggccccgg caaaacagtg ttcgtgttcc ccggacaggg cagtcaatac
1801  cccggcatgg cgcagatct ctaccgccaa ttccccgtgt cgcccacgc
1851  cctcgacgag gtcgctgcgg cgctgaaccc gcatctcgat gttgcgttgc
1901  ttgaggtgat gttcagccaa caagacactg ccatggcgca actgctggac
1951  cagaccttct atgcacaacc ggcgttgttc gcgctgggaa ccgctctaca
2001  tcgattgttc acccacgccg gtatccaccc ggactacctg ctaggccact
2051  ccatcggaga actcaccgcg gcatacgccg ccggtgtgct gtcactgcaa
2101  gacgcagcca ccttggtcac aagccgagga cgactgatgc aatcctgcac
2151  gcccggcggg acgatgctcg cactacaagc cagcgaagca gaagtacaac
2201  cgctgcttga aggcctagac cacgccgtgt ccatcgccgc gatcaacgga
2251  gcaacgtcga tcgtactgtc aggagatcac gacagcctcg aacaaatcgg
2301  cgagcacttc attacccaag atcgacgtac cacccgactg caggtcagtc
2351  acgctttcca ctctccacat atggacccca tcctcgaaca attccgccag
2401  atcgcggccc aactcacctt cagcgcaccc accctgccca tcttgtccaa
2451  cctcaccggg cagatcgccc gccacgacca actcgcctca cctgactatt
2501  ggacccaaca gctacgtaac actgtccggt tccatgacac tgtcgctgcc
2551  ctgctcgggg cgggtgagca ggttttcctg gaactttcac ctcacccggt
2601  gttgacacaa gcgatcaccg acaccgtcga acaagccggc ggcggcggcg
2651  cagcagtgcc agctctacgc aaggatcgcc ctgatgctgt cgcgttcgct
```

FIGURE 7

```
2701 gcagcactcg gccagctgca ctgccatggc atcagcccat cctggaatgt
2751 tctttactgc caggcccgcc ccctcacact gcccacctac gctttccagc
2801 atcagcgtta ctggctgctg cccaccgctg gtgatttcag cggggccaat
2851 acccacgcca tgcatccgct gctagacacc gccaccgaac tggccgaaaa
2901 ccgcggatgg gtgttcaccg gccggatcag cccacgcacc caaccatggc
2951 taaacgaaca cgccgtcgaa tcagccgtgc tgttcccagg caccggattt
3001 gtcgagctag cgctgcatgt cgctgaccgt gccggatatt cctcggtcaa
3051 cgaactgatc gtgcacaccc ccctgctact cgctggccac gacaccgcgg
3101 atctacagat caccgtcacc gacaccgatg acatgggccg gcagtctctt
3151 aacatccact cgcacccaca tatcggccat gacaacacca ccaccggcga
3201 tgaacaaccc gagtgggtcc tgcatgccag cgcagtcctg accgcacaaa
3251 ccaccgacca caaccacctc cccctaacgc ctgtgccgtg gcctccaccc
3301 ggcacagccg cgatcgaggt ggatgacttc tacgacgacc tggctgcaca
3351 gggctacaac tacggcccga cattccaagg tgtgcaacgg atatggcgtg
3401 accacgccac acccgatgtc atctacgccg aagttgaact acccgaagac
3451 accgacatcg acggctacgg catccacccc gccctattcg acgccgcttt
3501 acacccccta ctcgccctga cccaaccccc caccaacgac accgatgaca
3551 ccaacaccgc agacaccggt gaccaggtgc ggctgcccta cgcctttacc
3601 ggcatcagtt tgcacgccac ccacgccacc cgattgcggg tacggctgac
3651 ccgtaccggc gccgatgcca tcaccgtgca caccagtgac accaccggag
3701 cccccggtggc gatcatcgac tcattgatca cccgcccccct caccaccgcc
3751 acagggtctg ctccggcaac cacagcagct ggcctactac acctgagctg
3801 gccaccacac cctgacacca cgaccgacac cgacaccgac accgatgccc
3851 tgcggtatca ggtgatcgcc gaacccactc aacaactgcc ccgctacctg
3901 cacgacctac acaccagcac cgacctgcac accagcacca ccgaagcaga
3951 cgtggttgtg tggccggtac cggtgcccag caacgaagag ctccaggcac
4001 accaagcatc cgacaccgcg gtgtcttctc ggatacacac cctgacccgc
4051 caaacactta ccgtggtgca ggactggctc actcaccccg acaccaccgg
4101 cacccgactg gtcatcgtga cccgccacgg cgtcagcacc agtgcccacg
4151 acccggtccc cgacctagcc cacgccgcag tgtggggcct gatccgcagc
4201 gcccaaaacg aacaccccgg acgcttcaca ctgctcgaca ccgacgacaa
4251 caccaacagc gacaccctca ccaccgccct aaccctgcca acccgcgaaa
4301 accaactggc catacgccgc gacaccatcc acatcccccg cctgacccgc
4351 accgctgtcc tgacaccacc ggacagcggc ccctggcgcc ttgacaccac
4401 cggcaagggt gatctggcca acctcgccct gctaccgacc gcccacactg
4451 ccctggcctc tggacaaatc cgtatcgatg tccgggccgc tggtttgaat
4501 tttcacgacg tggtcgtcgc gttggggcta atccccgacg acggattcgg
4551 cggagaagcc gccggggtga tcagcgagat cggtcccgac gtctacggat
4601 tcgccgtggg tgatgccgtg accggcatga ccgtctctgg tgcgtttgcc
4651 cccagcactg tcgctgatca ccgcatggtg atgacgatcc cggcccggtg
4701 gtccttcccc caagccgcat ccataccggt ggtattcctg accgcctaca
4751 tcgctttggc cgagatctcg ggcctaagcc gagggcaacg agtgctgatc
4801 catgccggca ctggcggtgt gggtatggct gcgattcaat ggcacacca
4851 tttgggtgcc gaagtattcg ccaccgccag cgccgcgaaa tggagcaccc
4901 ttgaggcact ggggggtaccg cgcgaccata tcgcttcctc gcgtactctg
4951 gacttttcca acgcattcct cgatgccacc aacggcgccg gtgttgatgt
5001 cgtattgaac tgcctcagtg gtgaattcgt cgaagcatcc ctagccctgc
5051 tgccccgcgg tggccatttc gtcgaaatcg gcaaaaccga catccgtgat
5101 accgaggtca tcgccgcaac ccatcccggc gtcatttacc gcgccctcga
5151 tctgctcagc gtctcccccg atcacatcca gcgcacactg gcccaactgt
5201 ccccactgtt tgccaccgac accctaaaac cctaccgac cactaattac
5251 agcatctacc aagccatctc ggccttacgt gacatgagtc aagcccgtca
5301 cacaggcaag atcgtgctca ctgcgccggt ggtggtagat cctgagggca
5351 cggtgttgat caccggggggg accgggacgc tgggtgcctt gttcgccgag
5401 catctggttt ctgcccatgg tgtccggcat ctgttgttga cctcgcggcg
5451 cggacctcag gcccacggtg ccaccgatct gcagcagcgg ctcaccgatc
5501 taggtgctca tgtcaccatc acggcctgcg atatcagcga ccccgaagca
```

FIGURE 7(continued)

```
5551 ctggccgccc tggtcaattc agtgcccaca caacaccgtt taaccgcggt
5601 agtgcacacc gccgcggtat tggccgacac cccggtcacc gagttgaccg
5651 gcgatcaact cgaccaggtg ctggccccca aaatcgacgc ggcatggcag
5701 ctgcaccaac tcacctacga acacaacctg tctgcattca tcatgttctc
5751 gtccatggcc ggaatgatag gcagtcccgg tcagggtaac tacgcggcag
5801 ccaacaccgc gttagatgct ctcgccgact accgccaccg cctgggcttg
5851 cccgcgacca gcctggcctg gggctactgg cagacccgca ccggtgtcac
5901 cgcgcatcta accgatgtag atctagcccg catgacccgc ctgggtttga
5951 tgcccatcgc caccagccac ggactggccc tgttcgatgc cgccctcgcc
6001 accggacagc ccgtttcgat acccgccccg atcaacaccc acaccctggc
6051 ccgacacgcc cgcgacaaca ccctgacccc gatcctgtct gcgctgatca
6101 ccacaccacg gcgccgggcg gcctctgccg caaccgatct cgctgcccgc
6151 ctcaacggac ttagccccca acagcaacaa caaacactgg ccaccctcgt
6201 ggccgcggcc accgccaccg tgctgggcca ccacacccc gaaagcatca
6251 gcccagccac cgcgttcaaa gacctcggaa tcgattcgct gaccgccctt
6301 gaactgcgca acaccctcac ccacaacacc ggcctggatc tgcccccccac
6351 cctcatcttc gatcacccca caccccatgc gctaacccaa cacctgcaca
6401 cccgactcac ccaaagccat accccggtcg gaccaattgc gtccctgcta
6451 agccacgcga tcgatgaggg caaattccgt gccggcgctg acctattgat
6501 ggccgcatcc aatttgaacc aaagtttcag caatatggct gaactcaacc
6551 agctcccggc cgtgacggac atagctgacg cgtctcctga tgggctactc
6601 accctgatct gcatctctac ctcagagaat gagtacgctc gcctcgctgc
6651 tgcgaacatt cattcactga ccttcgctga aattgcggcg cccggctttt
6701 acgacgcgca gctgccaaat tcgatagaga cgtcggcaga ggcgctggca
6751 actgccatca caggcgccta cgcaaatacg tccattgttc tggtagcgca
6801 ctccattgtc tgcgagctag ctcaggcaac gatgacacgt ctacaagacg
6851 ctgacatcga tcttgtgggt ctggttctgt tggatccact cgaagggact
6901 aacagcactg aagattatgt ggagacagtc ttgactcgaa tcgagcatat
6951 caatgcaccg agggtcggag tagacggtta ccttgccgcc ctgggccgct
7001 atctccaatt ccacgaagac cgccgaatac caataccgga aacgcggcac
7051 atgacactgc actcggacac gaaaattgac cgtgcccaaa caccaatgaa
7101 cttattacaa gatgaggcag cgttgaccgc cctcaaaata ggaaactgga
7151 tgaacgacac agggagtatc gcagtaacac tgagagatgg acccgtattc
7201 ttgggcaggg cccgctctgt caacatgagg tga
```

FIGURE 7(continued)

MlsB gene
```
1     gtgatcttcg gagatgctca ccaaaactgc aggggaggtc gggtgttggg
51    tgatgcagtc gcagtggtcg gaatgtcttg ccgggttcct ggcgcatctg
101   atccggacgc tctgtgggcg ctgctgcgag acgggatcag tgtggtcgat
151   gagatacctt ctgcacgttg gaatttagac ggcctcgttg ctcaccgact
201   gaccgatgag caacgatcag cgcttcggca tggcgccttt cttgatgacg
251   tcgaagggtt tgacgccgcg ttcttcggaa ttaacccctc cgaagctggg
301   tcgatggatc cgcagcaacg attgatgctt gaactgacct gggcagcact
351   cgaagatgct cgaatcgtgc cagaacatct ttccggtagc agtagcgggg
401   tgtttaccgg cgccatgagc gatgattaca cgaccgcggt gacctaccgc
451   gcagcgatga ctgcacatac ctttgcgggg actcaccgca gcctcatagc
501   caaccgtgtc tcctacacac tcggtctacg cggacctagt ttggtcatcg
551   ataccgggca atcgtcctca ctggtggctg tgcacgtggc aatggaaagc
601   ttgcgcagag aagaaacttc acttgctatc gcgggtggta ttcaccttaa
651   cctcagcctc gccgccgcac tgagcgcagc acactttgga gcccttttcac
701   ctgacggacg ctgctacacc ttcgacgcac gtgccaacgg atacgttcgt
751   ggcgaaggcg gcggcgtcgt cgtcctcaaa cgtctcaacg acgccctagc
801   cgacggcaac catatttact gtgtgatccg cggcagctca gtcaacaacg
851   acggcgccac tcaagacttg acagcgcccg gagtcgacgg ccagcgtcaa
901   gcgctccttc aagcttatga gcgagccgaa atcgacccct cagaagtcca
951   atacgtcgag ctacatggca ccggcacccg actcggcgat cccaccgaag
1001  cccactcgct tcactccgtc ttcggcacat ccacggtccc gcgcagcccg
1051  ctgctagtcg ggtcaatcaa aaccaatatc ggtcacctcg aaggcgccgc
1101  aggaatcctc ggcctaatca agactgccct tgccgttcat catcgccagc
1151  ttcccccccag cctcaactac acggttccta acccaaaaat cccgctagag
1201  cagctagggc tccgcgtcca aaccactctc agtgaatggc cggacttaga
1251  caaaccgcta acggcgggcg tgtcatcttt ttccatgggt ggcaccaacg
1301  cccacctcat cctccaacaa ccccccaccc ccgacaccac acaaaccccc
1351  aaccccacaa caggttctga tcccgcagtg ggttctgatc ccgcagtggg
1401  tgtactggtg tggccgttgt cagcgcgttc agcgccgggg ttaagcgcac
1451  aagcggcccg tctgtaccag catctcagcg cccaccccga tctggatccg
1501  atcgatgtag cccacagcct ggctaccaca cgcagccacc accccccaccg
1551  cgccaccatc accaccagca ttgagcacca cagcgaaaac aaccacgaca
1601  caaccgatgc gctggccgca ctgcacgccc tggccaacaa cggcacacac
1651  cccctgctga gcagaggcct gctgaccccca cagggccccg gcaaaacagt
1701  gttcgtgttc cccggacagg gcagtcaata cccggcatg ggcgcagatc
1751  tctaccgcca attccccgtg ttcgcccacg ccctcgacga ggtcgctgcg
1801  gcgctgaacc cgcatctcga tgttgcgttg cttgaggtga tgttcagcca
1851  acaagacact gccatggcgc aactgctgga ccagaccttc tatgcacaac
1901  cggcgttgtt cgcgctggga accgctctac atcgattgtt cacccacgcc
1951  ggtatccacc cggactacct gctaggccac tccatcggag aactcaccgc
2001  ggcatacgcc gccggtgtgc tgtcactgca agacgcagcc accttggtca
2051  caagccgagg acgactgatg caatcctgca cgcccggcgg gacgatgctc
2101  gcactacaag ccagcgaagc agaagtacaa ccgctgcttg aaggcctaga
2151  ccacgccgtg tccatcgccg cgatcaacgg agcaacgtcg atcgtactgt
2201  caggagatca cgacagcctc gaacaaatcg gcgagcactt cattacccaa
2251  gatcgacgta ccacccgact gcaggtcagt cacgctttcc actctccaca
2301  tatggacccc atcctcgaac aattccgcca gatcgcggcc caactcacct
2351  tcagcgcacc caccctgccc atcttgtcca acctcaccgg gcagatcgcc
2401  cgccacgacc aactcgcctc acctgactat tggacccaac agctacgtaa
2451  cactgtccgg ttccatgaca ctgtcgctgc cctgctcggg gcgggtgagc
2501  aggttttcct ggaactttca cctcacccgg tgttgacaca agcgatcacc
2551  gacaccgtcg aacaagccgg cggcggcggc gcagcagtgc cagctctacg
2601  caaggatcgc cctgatgctg tcgcgttcgc tgcagcactc ggccagctgc
2651  actgccatgg catcagccca tcctggaatg ttctttactg ccaggcccgc
2701  cccctcacac tgcccaccta cgctttccag catcagcgtt actggctgct
2751  gcccaccgct ggtgatttca gcggggccaa tacccacgcc atgcatccgc
```

FIGURE 8

```
2801 tgctagacac cgccaccgaa ctggccgaaa accgcggatg ggtgttcacc
2851 ggccggatca gcccacgcac ccaaccatgg ctaaacgaac acgccgtcga
2901 atcagccgtg ctgttcccga acaccggatt tgtcgagcta gcgctgcatg
2951 tcgctgaccg tgccggatat tcctcggtca acgaactgat cgtgcacacc
3001 cccctgctgc tcgctggcca cgacaccgcg gatctacaga tcaccgtcac
3051 cgacaccgat gacatgggcc ggcagtctct taacatccac tcgcacccac
3101 atatcggcca tgacaacacc accaccggcg atgaacaacc cgagtgggtc
3151 ctgcatgcca gcgcagtcct gaccgcacaa accaccgacc acaaccacct
3201 cccctaacg cctgtgccgt ggcctccacc cggcacagcc gcgatcgagg
3251 tggatgactt ctacgacgac ctggctgcac agggctacaa ctacggcccg
3301 acattccaag gtgtgcaacg gatatggcgt gaccacgcca cacccgatgt
3351 catctacgcc gaagttgaac tacccgaaga caccgacatc gacggctacg
3401 gcatccaccc cgccctattc gacgccgctt tacaccccct actcgccctg
3451 acccaacccc ccaccaacga caccgatgac accaacaccg cagacaccgg
3501 ggaccaggtg cggctgccct acgcctttac cggcatcagt ttgcacgcca
3551 cccacgccac ccgattgcgg gtacggctga cccgtaccgg cgccgatgcc
3601 atcaccgtgc acaccagtga caccaccgga gccccggtgg cgatcatcga
3651 ctcattgatc acccgccccc tcaccaccgc cacagggtct gctccggcaa
3701 ccacagcagc tggcctacta cacctgagct ggccaccaca ccctgacacc
3751 acgaccgaca ccgacaccga caccgatgcc ctgcggtatc aggtgatcgc
3801 cgaacccact caacaactgc ccgctacct gcacgaccta cacaccagca
3851 ccgacctgca caccagcacc accgaagcag acgtggttgt gtggccggta
3901 ccggtgccca gcaacgaaga gctccaggca caccaagcat ccgacaccgc
3951 ggtgtcttct cggatacaca ccctgacccg ccaaacactt accgtggtgc
4001 aggactggct cactcacccc gacaccaccg gcacccgact ggtcatcgtg
4051 acccgccacg gcgtcagcac cagtgcccac gacccggtcc ccgacctagc
4101 ccacgccgca gtgtggggcc tgatccgcag cgcccaaaac gaacaccccg
4151 gacgcttcac actgctcgac accgacgaca acaccaacag cgacaccctc
4201 accaccgccc taaccctgcc aacccgcgaa aaccaactgg ccatacgccg
4251 cgacaccatc cacatccccc gcctgacccg acacagcagt gacggtgcgc
4301 tcactgcgcc ggtggtggta gatcctgagg gcacggtgtt gatcaccggg
4351 gggaccggga cgctgggtgc cttgttcgcc gagcatctgg tttctgccca
4401 tggtgtccgg catctgttgt tgacctcgcg gcgcggacct caggcccacg
4451 gtgccaccga tctgcagcag cggctcaccg atctaggtgc tcatgtcacc
4501 atcacggcct gcgatatcag cgaccccgaa gcactggccg ccctggtcaa
4551 ttcagtgccc acacaacacc gtttaaccgc ggtagtgcac accgccgcgg
4601 tattggccga caccccggtc accgagttga ccggcgatca actcgaccag
4651 gtgctggccc ccaaaatcga cgcggcatgg cagctgcacc aactcaccta
4701 cgaacacaac ctgtctgcat tcatcatgtt ctcgtccatg ccggaatga
4751 taggcagtcc cggtcagggt aactacgcgg cagccaacac cgcgttagat
4801 gctctcgccg actaccgcca ccgcctgggc ttgcccgcga ccagcctggc
4851 ctggggctac tggcagactc acaccggtct caccgcgcat ctaaccgatg
4901 tagatctagc ccgcatgacc cgcctgggtt tgatgcccat cgccaccagc
4951 cacggactgg ccctgttcga tgccgcctc gccaccggac agcccgtttc
5001 gatacccgcc ccgatcaaca cccacaccct ggcccgacac gcccgcgaca
5051 acaccctggc cccgatcctg tctgcgctga tcaccacacc acggcgccgg
5101 gcggcctctg ccgcaaccga tctcgctgcc cgcctcaacg gacttagccc
5151 ccaacagcaa caacaaacac tggccaccct cgtggccgcg gccaccgcca
5201 ccgtgctggg ccaccacacc cccgaaagca tcagcccagc caccgcgttc
5251 aaagacctcg gaatcgattc gctgaccgcc cttgaactgc gcaacaccct
5301 cacccacaac accggcctca accttcgtc cactcttatc ttcgatcacc
5351 ccacaccca tgcggtggcc gagcatctgc ttgaacagat ccctggcatc
5401 ggtgccctgg tgccggctcc ggtggtgatc gcagctggtc gtaccgagga
5451 gccggtggcg gtggtgggga tggcgtgtcg tttccccggt ggtgtcgcat
5501 cagcggatca gttgtgggac ttggtgatcg ctggccgtga tgtggtgggt
5551 aattttccgg ccgatcgggg ttgggatgtg gagggactgt ttgatcccga
5601 tccggacgcg gtcggcaaaa cctacacccg ttacggcgcg ttccttgacg
```

FIGURE 8(continued)

```
5651 atgcggcagg ttttgatgcc gggttctttg ggatctctcc acgggaggca
5701 cgcgcgatgg accccccagca gcggctgctg ctggaggtgt gctgggaagc
5751 gctagaaacc gcgggtattc ccgcgcacac cttggccggc acctccaccg
5801 gggtattcgt cggagcctgg gcccagtcct acggcgccac caactccgat
5851 gacgctgagg ggtatgcgat daccggcggc gcgactagcg tcatgtccgg
5901 ccgtatcgcc tacaccttgg gcctagaagg tccagcgatc accgttgaca
5951 ccgcctgctc gtcatcgctg gtggcaattc acctggcctg ccaatcctta
6001 cgcaacaacg aatcccagct agcactggcc ggcggcgtca ccgtgatgag
6051 cacacctgcg gttttcaccg agttctcccg ccaacgcggc ctggccccag
6101 atggacgctg caaagccttc gccgctaccg ccgatggcac cggctggggt
6151 gaaggcgccg cggtcttggt ccttgaacgg ctctccgagg cccgccgcaa
6201 caaccacccg gtccttgcga tcgtcgctgg atcggcgatc aaccaagacg
6251 gcgcatccaa cggactgacc gcaccccacg gcccgtcaca acaacgcgtc
6301 atcaaccaag cactagccaa cgccggcctc acccacgacc aggtcgacgc
6351 cgtcgaagcc cacggcaccg gcaccacact gggtgacccc atcgaagcca
6401 gcgccctaca cgccacctac ggccaccacc acacgcccga tcaaccgctt
6451 tggctgggat ccatcaaatc caacatcggc cacacccaag ccgccgccgg
6501 cgccgccggt gtggtcaaga tgatccaagc catcacccac gccaccttgc
6551 ccgccacctt gcacgtcgac caacccagcc cccacatcga ctggtccagc
6601 ggcacagtcc gactcctaac cgagcccatc caatggccca acaccgacca
6651 cccccgcacc gcggcggtgt cctcattcgg catcagcggc accaacgccc
6701 acctcatcct ccaacaaccc cccaccccta accccacaca aaccccccgag
6751 gactgcagcc ccgcacaatc tccctgcgca acaatcaccg atgcaggcac
6801 gggattatcg tttgtgccct gggtgatttc agcgaagtcg gctgaggcgt
6851 tgtctgcgca ggcgagccga ttgttgacgc gccttgacga tgatccagtt
6901 gtcgatgcaa tcgacctggg gtggtcattg atagccactc gatcgatgtt
6951 tgagcatcgc gcagtagttg tgggtgcgga tcgtcaccag ttgcagcgcg
7001 ggttggccga gttggcttct ggtaacttgg gcgccgatgt agtggtgggc
7051 cgggcccgcg cagcgggcga gactgtaatg gtgtttcccg gtcagggatc
7101 acagcggttg ggcatgggcg cgcagcttta tgaacaattc ccggtattcg
7151 cggcggcgtt tgatgacgtt gttgatgcgc tggaccagta tctgcggttg
7201 ccgctacgcc aagttatgtg gggtgacgat gaaggcctgc tcaattcaac
7251 ggagttcgcc cagccgtcgt tgtttgctgt cgaggtcgca ctgtttgcgt
7301 tgctgcgctt ctggggtgtc gttccggatt acgtgatagg ccattcggta
7351 ggagagctgg ccgctgcaca agtggctggc gttttgagcc tgcaggacgc
7401 ggctaaatta gtttcagcgc ggggccgact gatgcaggcc ctgcccgccg
7451 gtggagcgat ggtcgcggta gccgccagcc agcatgaagt cgagcctttg
7501 ctggttgaag gggtcgatat cgcggcgctc aatgcgccag ggtcagttgt
7551 gatctctggt gatcaggcgg cagtccgttt gatcgctaat cgattggcgg
7601 atagggggcta cagggcgcac gaacttgcgg tttcgcatgc ctttcattca
7651 tcgttgatgg agccgatgtt ggaggagttc gctcggctcg cttctgaaat
7701 cgttgtggag caaccgcaga ttccactgat ttcgaacgtg actggtcagc
7751 tggccaacgc cgactacggg tcggcaggtt actgggtgga ccacatccgc
7801 cgtccagtcc gtttcgccga tagtgtcgct tcgttggaag ccatgggggc
7851 tagctgcttc attgaagtcg gtccagccag cgggttgggc gcagctatcg
7901 agcaatcctt gaaatctgcc gagccgaccg tgtcagtgtc ggcactgtcc
7951 accgataaac ctgaatccgt cgccgtattg cgcgctgcag cacgactttc
8001 cacctccggc attcctgtgg attggcagtc ggtgttcgac ggccgcagca
8051 cccagacagt taacctgccc acctacgcct tccagcggca acggttctgg
8101 ctcgacgcca accgtatcgg tcaaggcgat cccgccagtc aaccacaggc
8151 ccagaacgtt gaatcccgtt tttgggaggc ggtcgagcgg gaagacgttg
8201 atggcttggc tgattctata ggtgtcaccg ccagtgccat gcagaccgtg
8251 ctacctgcat tgtcttcatg gcgtcgcgcg gagcgcacac agtccgagct
8301 tgattcctgg cgctatcagg tgacatggct gtcttcccca gcaacgccga
8351 gttcgatcac gctgtccggc atttggttgc tgatagttcc aagcgaactt
8401 gcaaagactg acccagtaat tggatgtgct gcagcgctcg aagcgcacgg
8451 cgccttagtc acgattatca caattttcga gccggacttc aatcgctcat
```

FIGURE 8(continued)

```
 8501  tgatgggcgc ttccctaaaa gatatcggtt cacacatatc tggtgtcata
 8551  tcgttcttag ggattcacgg gtccgaattc tccgatagcg cgcggtcaa
 8601  gacattaaat cttgtgcaag caatgggcga tgtccactta gacgttcctt
 8651  tgtggtgcct aacgcagggc gcggtatcga tcagcgccga cgatttgatc
 8701  cgatgctcgt cagcagccct ggtgtggggt ctggggagag tcgtcgcatt
 8751  agagcacccg ggatcgtggg gtggcttagt agacctcccc gagtcacccg
 8801  acgatgcagc atgggagcgc ttgtgcgccc tcctcgcgca gccgacggat
 8851  gaagatcagt ttgcgatcag gccgtctggg gttttcctac ggagattgat
 8901  ccacgccccg gcaaccacga catccaaatc ctcgaccgcg tgggctccga
 8951  gggggaccgt gttaatcaca ggcggcacag gcgcgttagg cgcacacgtc
 9001  gcaaggtggt tggcccacaa atatgaatcg gtagatttgc tcttaaccag
 9051  ccgtcgcggg atggcagccg atggagctac agagctagtg gatgacctcc
 9101  gcacggctgg cgccagtgtg acagtgcacg cctgcgacgt gacagaccgc
 9151  acttcagtcg aggctgcaat agcaggtaaa tcccttgatg cggtctttca
 9201  tcttgcagga cgacaccagc caactctgct aacagaactc gaggacgaat
 9251  cctttagtga cgaattggcg ccgaaggttc acggtgccca agtattgagt
 9301  gacatcacgt ctaacctcac actatcagcg tttgtcatgt tctcgtcagt
 9351  agccggaatc tggggcggca aaagtcaagg cgcatatgct gccgctaacg
 9401  cattcttaga ttcgctcgcc gagaaacggc gcacgttggg gttaccagca
 9451  acatcggtcg cttggggact gtgggctggc ggcggcatgg gagaccggcc
 9501  atccgcttcg ggactaaacc ttattggctt gaaatcgatg tcagcagatt
 9551  tagctgtgca ggcgctaagc gacgccattg acagaccgca agcaacattg
 9601  actgttgcga gcgtcaactg ggatcggttc taccccacat tcgctttggc
 9651  gcgaccgagg cccttcctac acgaaatcac agaggtaatg cttaccgcg
 9701  agtcgatgcg ctcaagctct gcatcgacgg cgacgctcct gacgagcaaa
 9751  ttagccggac taacggcgac agaacagcgt gcagtcaccc ggaagttggt
 9801  ccttgatcaa gccgcatccg ttctcgggta cgcctcaact gagagtctcg
 9851  atactcatga gtcattcaaa gacctcggat ttgattcgct gaccgccctt
 9901  gaactgcgcg accacctcca aactgcgacc ggcctcaacc tttcgtccac
 9951  tcttatcttc gatcaccccа caccccatgc ggtggccgag catctgcttg
10001  aacagatccc tggcatcggt gccctggtgc cggctccggt ggtgatcgca
10051  gctggtcgta ccgaggagcc ggtggcggtg gtggggatgg cgtgtcgttt
10101  ccccggtggt gtcgcatcag cggatcagtt gtgggacttg gtgatcgctg
10151  gccgtgatgt ggtgggtaat tttccggccg atcggggttg ggatgtggag
10201  ggactgtttg atcccgatcc ggacgcggtc ggcaaaacct acacccgtta
10251  cggcgcgttc cttgacgatg cggcaggttt tgatgccggg ttctttggga
10301  tctctccacg ggaggcacgc gcgatggacc cccagcagcg gctgctgctg
10351  gaggtgtgct gggaagcgct agaaaccgcg ggtattcccg cgcacacctt
10401  ggccggcacc tccaccgggg tattcgtcgg agcctgggcc cagtcctacg
10451  gcgccaccaa ctccgatgac gctgaggggt atgcgatgac cggcggcgcg
10501  actagcgtca tgtccggccg tatcgcctac accttgggcc tagaaggtcc
10551  agcgatcacc gttgacaccg cctgctcgtc atcgctggtg gcaattcacc
10601  tggcctgcca atccttacgc aacaacgaat cccagctagc actggccggc
10651  ggcgtcaccg tgatgagcac acctgcggtt ttcaccgagt tctcccgcca
10701  acgcggcctg gccccagatg gacgctgcaa agccttcgcc gctaccgccg
10751  atggcaccgg ctggggtgaa ggcgccgcgg tcttggtcct tgaacggctc
10801  tccgaggccc gccgcaacaa ccacccggtc cttgcgatcg tcgctggatc
10851  ggcgatcaac caagacggcg catccaacgg actgaccgca ccccacggcc
10901  cgtcacaaca acgcgtcatc aaccaagcac tagccaacgc cggcctcacc
10951  cacgaccagg tcgacgccgt cgaagcccac ggcaccggca ccacactggg
11001  tgaccccatc gaagccagcg ccctacacgc cacctacggc caccaccaca
11051  cgcccgatca accgctttgg ctgggatcca tcaaatccaa catcggccac
11101  acccaagccg ccgccggcgc cgccggtgtg gtcaagatga tccaagccat
11151  cacccacgcc accttgcccg ccaccttgca cgtcgaccaa cccagccccc
11201  acatcgactg gtccagcggc acagtccgac tcctaaccga gcccatccaa
11251  tggcccaaca ccgaccaccc ccgcaccgcg cggtgtcct cattcggcat
11301  cagcggcacc aacgcccacc tcatcctcca acaacccccc acccctaacc
```

FIGURE 8(continued)

```
11351 ccacacaaac ccccgaggac tgcagccccg cacaatctcc ctgcgcaaca
11401 atcaccgatg caggcacggg attatcgttt gtgccctggg tgatttcagc
11451 gaagtcggct gaggcgttgt ctgcgcaggc gagccgattg ttgacgcgcc
11501 ttgacgatga tccagttgtc gatgcaatcg acctggggtg gtcattgata
11551 gccactcgat cgatgtttga gcatcgcgca gtagttgtgg gtgcggatcg
11601 tcaccagttg cagcgcgggt tggccgagtt ggcttctggt aacttgggcg
11651 ccgatgtagt ggtgggccgg gcccgcgcag cgggcgagac tgtaatggtg
11701 tttcccggtc agggatcaca gcggttgggc atgggcgcgc agctttatga
11751 acaattcccg gtattcgcgg cggcgtttga tgacgttgtt gatgcgctgg
11801 accagtatct gcggttgccg ctacgccaag ttatgtgggg tgacgatgaa
11851 ggcctgctca attcaacgga gttcgcccag ccgtcgttgt ttgctgtcga
11901 ggtcgcactg tttgcgttgc tgcgcttctg gggtgtcgtt ccggattacg
11951 tgataggcca ttcggtagga gagctggccg ctgcacaagt ggctggcgtt
12001 ttgagcctgc aggacgcggc taaattagtt tcagcgcggg gccgactgat
12051 gcaggccctg cccgccggtg gagcgatggt cgcggtagcc gccagccagc
12101 atgaagtcga gcctttgctg gttgaagggg tcgatatcgc ggcgctcaat
12151 gcgccagggt cagttgtgat ctctggtgat caggcggcag tccgtttgat
12201 cgctaatcga ttggcggata ggggctacag ggcgcacgaa cttgcggttt
12251 cgcatgcctt tcattcatcg ttgatggagc cgatgttgga ggagttcgct
12301 cggctcgctt ctgaaatcgt tgtggagcaa ccgcagattc cactgatttc
12351 gaacgtgact ggtcagctgg ccaacgccga ctacgggtcg gcaggttact
12401 gggtggacca catccgccgt ccagtccgtt tcgccgatag tgtcgcttcg
12451 ttggaagcca tgggggctag ctgcttcatt gaagtcggtc cagccagcgg
12501 gttgggcgca gctatcgagc aatccttgaa atctgccgag ccgaccgtgt
12551 cagtgtcggc actgtccacc gataaacctg aatccgtcgc cgtattgcgc
12601 gctgcagcac gactttccac ctccggcatt cctgtggatt ggcagtcggt
12651 gttcgacggc cgcagcaccc agacagttaa cctgcccacc tacgccttcc
12701 agcggcaacg gttctggctc gacgccaacc gtatcggtca aggcgatccc
12751 gccagtcaac cacaggccca gaacgttgaa tcccgttttt gggaggcggt
12801 cgagcgggaa gacgttgatg gcttggctga ttctataggt gtcaccgcca
12851 gtgccatgca gaccgtgcta cctgcattgt cttcatggcg tcgcgcggag
12901 cgcacacagt ccgagcttga ttcctggcgc tatcaggtga catggctgtc
12951 ttccccagca acgccgagtt cgatcacgct gtccggcatt tggttgctga
13001 tagttccaag cgaacttgca aagactgacc cagtaattgg atgtgctgca
13051 gcgctcgaag cgcacggcgc cttagtcacg attatcacaa ttttcgagcc
13101 ggacttcaat cgctcattga tgggcgcttc cctaaaagat atcggttcac
13151 acatatctgg tgtcatatcg ttcttaggga ttcacgggtc cgaattctcc
13201 gatagcggcg cggtcaagac attaaatctt gtgcaagcaa tgggcgatgt
13251 ccacttagac gttcctttgt ggtgcctaac gcagggcgcg gtatcgatca
13301 gcgccgacga tttgatccga tgctcgtcag cagccctggt gtggggtctg
13351 gggagagtcg tcgcattaga gcacccggga tcgtggggtg gcttagtaga
13401 cctccccgag tcacccgacg atgcagcatg ggagcgcttg tgcgccctcc
13451 tcgcgcagcc gacggatgaa gatcagtttg cgatcaggcc gtctggggtt
13501 ttcctacgga gattgatcca cgccccggca accacgacat ccaaatcctc
13551 gaccgcgtgg gctccgaggg ggaccgtgtt aatcacaggc ggcacaggcg
13601 cgttaggcgc acacgtcgca aggtggttgg cccacaaata tgaatcggta
13651 gatttgctct taaccagccg tcgcgggatg gcagccgatg gagctacaga
13701 gctagtggat gacctccgca cggctggcgc cagtgtgaca gtgcacgcct
13751 gcgacgtgac agaccgcact tcagtcgagg ctgcaatagc aggtaaatcc
13801 cttgatgcgg tctttcatct tgcaggacga caccagccaa ctctgctaac
13851 agaactcgag gacgaatcct ttagtgacga attggcgccg aaggttcacg
13901 gtgcccaagt attgagtgac atcacgtcta acctcacact atcagcgttt
13951 gtcatgttct cgtcagtagc cggaatctgg ggcggcaaaa gtcaaggcgc
14001 atatgctgcc gctaacgcat tcttagattc gctcgccgag aaacggcgca
14051 cgttggggtt accagcaaca tcggtcgctt ggggactgtg ggctggcggc
14101 ggcatgggag accggccatc cgcttcggga ctaaacctta ttggcttgaa
14151 atcgatgtca gcagatttag ctgtgcaggc gctaagcgac gccattgaca
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FIGURE 8(continued)

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14201 gaccgcaagc aacattgact gttgcgagcg tcaactggga tcggttctac
14251 cccacattcg ctttggcgcg accgaggccc ttcctacacg aaatcacaga
14301 ggtaatggct taccgcgagt cgatgcgctc gagctctgca tcgacggcga
14351 cgctcctgac gagcaaatta gccggactaa cggcgacaga acagcgtgca
14401 gtcacccgga agttggtcct tgatcaagcc gcatccgttc tcgggtacgc
14451 ctcaactgag agtctcgata ctcatgagtc attcaaagac ctcggatttg
14501 attcgctgac cgcccttgaa ctgcgcgacc acctccaaac tgcgaccggc
14551 ctcaaccttt cgtccactct tatcttcgat caccccacac cccatgcggt
14601 ggccgagcat ctgcttgaac agatccctgg catcggtgcc ctggtgccgg
14651 ctccggtggt gatcgcagct ggtcgtaccg aggagccggt ggcggtggtg
14701 gggatggcgt gtcgtttccc cggtggtgtc gcatcagcgg atcagttgtg
14751 ggacttggtg atcgctggcc gtgatgtggt gggtaatttt ccggccgatc
14801 ggggttggga tgtggaggga ctgtttgatc ccgatccgga cgcggtcggc
14851 aaaacctaca cccgttacgg cgcgttcctt gacgatgcgg caggttttga
14901 tgccgggttc tttgggatct ctccacggga ggcacgcgcg atggaccccc
14951 agcagcggct gctgctggag gtgtgctggg aagcgctaga aaccgcgggt
15001 attcccgcgc acaccttggc cggcacctcc accggggtat tcgtcggagc
15051 ctgggcccag tcctacggcg ccaccaactc cgatgacgct gaggggtatg
15101 cgatgaccgg cggcgcgatc agcgtcatgt ccggccgtat cgcctacacc
15151 ttgggcctag aaggtccagc gatcaccgtt gacaccgcct gctcgtcatc
15201 gctggtggca attcacctgg cctgccaatc cttacgcaac aacgaatccc
15251 agctagcact gaccggcggc gtcaccgtga tgagcacacc tgcgattttc
15301 accgagttct cccgccaacg cggcctggcc ccagatggac gctgcaaagc
15351 cttcgccgct accgccgatg gcaccggctg gggtgaaggc gccgcggtct
15401 tggtccttga acggctctcc gaggcccgcc gcaacaacca cccggtcctt
15451 gcgatcgtcg ctggatcggc gatcaaccaa gacggcgcat ccaacggact
15501 gaccgcaccc cacggcccgt cacaacaacg cgtcatcaac caagcactag
15551 ccaacgccgg cctcacccac gaccaggtcg acgccgtcga agcccacggc
15601 accggcacca cactgggtga ccccatcgaa gccagcgccc tacacgccac
15651 ctacggccac caccacacgc ccgatcaacc gctttggctg ggatccatca
15701 aatccaacat cggccacacc caagccgccg ccggcgccgc cggtgtggtc
15751 aagatgatcc aagccatcac ccacgccacc ttgcccgcca ccttgcacgt
15801 cgaccaaccc agcccccaca tcgactggtc cagcggcaca gtccgactcc
15851 taaccgagcc catccaatgg cccaacaccg accacccccg caccgcggcg
15901 gtgtcctcat tcggcatcag cggcaccaac gcccacctca tcctccaaca
15951 accccccacc cccgacacca cacaaacccc caacaccaca acaggttctg
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16051 tcagcgcgtt cagcgccggg gttaagcgca caagcggccc gtctgtacca
16101 gcatctcagc gcccaccccg atctggatcc gatcgatgta gcccacagcc
16151 tggctaccac acgcagccac cacccccacc gcgccaccat caccaccagc
16201 attgagcacc acagcgaaaa caaccacgac acaaccgatg cgctggccgc
16251 actgcacgcc ctggccaaca acggcacaca cccCctgctg agcagaggcc
16301 tgctgacccc acagggcccc ggcaaaacag tgttcgtgtt ccccggacag
16351 ggcagtcaat accccggcat gggcgcagat ctctaccgcc aattccccgt.
16401 gttcgcccac gccctcgacg catgcgacgc agcgttacag cctttcactg
16451 gatggtcggt gctagctgtg ttacacgacg aacccgaggc ccgtcgttg
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16551 agccgcactc tggcggtggg ccggaatcac ccccgatgca gtcatcggcc
16601 actcccaggg cgagatcgcc gcggcacatg tggccggagc cctgaccttg
16651 cccgaagcag ctgcggtagt ggctttgcgc agccgtgtct tgaccgacct
16701 ggccggtgcc ggtgccatgg cttcagtgct atcgcccgag gaaccactga
16751 cccagctgct ggcacggtgg gacggcaaga tcactgtcgc cgcagttaac
16801 ggccccgcta gcgctgtggt ctccggcgat accacagcga tcaccgaatt
16851 gctgattacc tgcgaacacg aaaacatcga cgctcgcgct atcccggtgg
16901 actaccCctc tcattcCccc tatatggaac acatccgcca tcagttcctc
16951 gacgagctac ccgagctgac accgcggcca tcaaccatcg cgatgtattc
17001 caccgtcgac ggcgaacctc acgacaccgc ctacgacacc accacaatga
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FIGURE 8(continued)

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17051 ccgcggacta ctggtaccgc aacatccgta acactgtccg gttccatgac
17101 actgtcgctg ccctgctcgg ggcgggtgag caggttttcc tggaactttc
17151 acctcacccg gtgttgacac aagcgatcac cgacaccgtc gaacaagccg
17201 gcggcggcgg cgcagcagtg ccagctctac gcaaggatcg ccctgatgct
17251 gtcgcgttcg ctgcagcact cggccagctg cactgccatg gcatcagccc
17301 atcctggaat gttctttact gccaggcccg ccccctcaca ctgcccacct
17351 acgctttcca gcatcagcgt tactggctgc tgcccaccgc tggtgatttc
17401 agcggggcca atacccacgc catgcatccg ctgctagaca ccgccaccga
17451 actggccgaa aaccgcggat gggtgttcac cggccggatc agcccacgca
17501 cccaaccatg gctaaacgaa cacgccgtcg aatcagccgt gctgttccca
17551 ggcaccggat ttgtcgagct agcgctgcat gtcgctgacc gtgccggata
17601 ttcctcggtc aacgaactga tcgtgcacac ccccctgctg ctcgctggcc
17651 acgacaccgc ggatctacag atcaccgtca ccgacaccga tgacatgggc
17701 cggcagtctc ttaacatcca ctcgcgccca catatcggcc atgacaacac
17751 caccaccggc gatgaacaac ccgagtgggt cctgcatgcc agcgcagtcc
17801 tgaccgcaca aaccaccgac cacaaccacc tcccctaac gcctgtgccg
17851 tggcctccac ccggcacagc cgcgatcgag gtggatgact tctacgacga
17901 cctggctgca cagggctaca actacggccc gacattccaa ggtgtgcaac
17951 ggatatggcg tgaccacgcc acacccgatg tcatctacgc cgaagttgaa
18001 ctacccgaag acaccgacat cgacggctac ggcatccacc ccgccctatt
18051 cgacgccgct ttacaccccc tactcgccct gacccaaccc cccaccaacg
18101 acaccgatga caccaacacc gcagacaccg gtgaccaggt cggctgccc
18151 tacgccttta ccggcatcag tttgcacgcc acccacgcca cccgattacg
18201 ggtacggctg acccgtaccg gcgccgatgc catcaccgtg cacaccagtg
18251 acaccaccgg agccccggtg gcgatcatcg actcattgat caccgcccc
18301 ctcaccaccg ccacagggtc tgctccggca accacagcag ctggcctact
18351 acacctgagc tggccaccac accctgacac cacgaccgac accgacaccg
18401 acaccgatgc cctgcggtat caggtgatcg ccgaacccac tcaacaactg
18451 ccccgctacc tgcacgacct acacaccagc accgacctgc acaccagcac
18501 caccgaagca gacgtggttg tgtggccggt accggtgccc agcaacgaag
18551 agctccaggc acaccaagca tccgacaccg cggtgtcttc tcggatacac
18601 accctgaccc gccaaacact taccgtggtg caggactggc tcactcaccc
18651 cgacaccacc ggcacccgac tggtcatcgt gacccgccac ggcgtcagca
18701 ccagtgccca cgacccggtc cccgacctag cccacgccgc agtgtggggc
18751 ctgatccgca gcgcccaaaa cgaacacccc ggacgcttca cactgctcga
18801 caccgacgac aacaccaaca gcgacaccct caccaccgcc ctaaccctgc
18851 caacccgcga aaaccaactg gccatacgcc gcgacaccat ccacatcccc
18901 cgcctgaccc gacacagcag tgacggtgcg ctcactgcgc cggtggtggt
18951 agatcctgag ggcacggtgt tgatcaccgg gggaccgggg acgctgggtg
19001 ccttgttcgc cgagcatctg gtttctgccc atggtgtccg gcatctgttg
19051 ttgacctcgc ggcgcggacc tcaggcccac ggtgccaccg atctgcagca
19101 gcggctcacc gatctaggtg ctcatgtcac catcacggcc tgcgatatca
19151 gcgaccccga agcactggcc gccctggtca attcagtgcc cacacaacac
19201 cgtttaaccg cggtagtgca caccgccgcg gtattggccg acaccccggt
19251 caccgagttg accggcgatc aactcgacca ggtgctggcc cccaaaatcg
19301 acgcggcatg gcagctgcac caactcacct acgaacacaa cctgtctgca
19351 ttcatcatgt tctcgtccat ggccggaatg ataggcagtc cggtcaggg
19401 taactacgcg gcagccaaca ccgcgttaga tgctctcgcc gactaccgcc
19451 accgcctggg cttgcccgcg accagcctgg cctggggcta ctggcagact
19501 cacaccggtc tcaccgcgca tctaaccgat gtagatctag cccgcatgac
19551 ccgcctgggt ttgatgccca tcgccaccag ccacggactg gccctgttcg
19601 atgccgccct cgccaccgga cagcccgttt cgatacccgc cccgatcaac
19651 acccacaccc tggcccgaca cgcccgcgac aacaccctgg ccccgatcct
19701 gtctgcgctg atcaccacac cacggcgccg ggcggcctct gccgcaaccg
19751 atctcgctgc ccgcctcaac ggacttagcc cccaacagca acaacaaaca
19801 ctggccaccc tcgtggccgc ggccaccgcc accgtgctgg gccaccacac
19851 ccccgaaagc atcagcccag ccaccgcgtt caaagacctc ggaatcgatt
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FIGURE 8(continued)

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19901 cgctgaccgc ccttgaactg cgcaacaccc tcacccacaa caccggcctg
19951 gatctgcccc ccaccctcat cttcgatcac cccacacccc atgcggtggc
20001 cgagcatctg cttgaacaga tccctggcat cggtgccctg gtgccggctc
20051 cggtggtgat cgcagctggt cgtaccgagg agccggtggc ggtggtgggg
20101 atggcgtgtc gtttccccgg tggtgtcgca tcagcggatc agttgtggga
20151 cttggtgatc gctggccgtg atgtggtggg taattttccg gccgatcggg
20201 gttgggatgt ggagggactg tttgatcccg atccggacgc ggtcggcaaa
20251 acctacaccc gttacggcgc gttccttgac gatgcggcag gttttgatgc
20301 cgggttcttt gggatctctc cacgggaggc acgcgcgatg gaccccagc
20351 agcggctgct gctggaggtg tgctgggaag cgctagaaac cgcgggtatt
20401 cccgcgcaca ccttggccgg cacctccacc ggggtattcg ccggagcctg
20451 ggcccagtcc tacggcgcca ccaactccga tgacgctgag gggtatgcga
20501 tgaccggcgg ctcgactagc gtcatgtccg gccgtatcgc ctacaccttg
20551 ggcctagaag gtccagcgat caccgttgac accgcctgct cgtcatcgct
20601 ggtggcaatt cacctggcct gccaatcctt acgcaacaac gaatcccagc
20651 tagcactggc cggcggcgtc accgtgatga gcacacctgc ggttttcacc
20701 gagttctccc gccaacgcgg cctggcccca gatggacgct gcaaagcctt
20751 cgccgctacc gccgatggca ccggctttgg tgaaggcgcc gcggtcttgg
20801 tccttgaacg gctctccgag gcccgccgca acaaccaccc ggtccttgcg
20851 atcgtcgctg gatcggcgat caaccaagac ggcgcatcca acggactgac
20901 cgcacccac ggcccgtcac aacaacgcgt catcaaccaa gcactagcca
20951 acgccggcct cacccacgac caggtcgacg ccgtcgaagc ccacggcacc
21001 ggcaccacac tgggtgaccc catcgaagcc agcgccctac acgccaccta
21051 cggccaccac cacacgcccg atcaaccgct ttggctggga tccatcaaat
21101 ccaacatcgg ccacacccaa gccgccgccg gcgccgccgg tgtggtcaag
21151 atgatccaag ccatcacccca cgccaccttg cccgccacct tgcacgtcga
21201 ccaacccagc ccccacatcg actggtccag cggcacagtc cgactcctaa
21251 ccgagcccat ccaatggccc aacaccgacc accccgcac cgcggcggtg
21301 tcctcattcg gcatcagcgg caccaacgcc cacctcatcc tccaacaacc
21351 ccccaccccc gacaccacac aaacccccaa ccccacaaca ggttctgatc
21401 ccgcagtggg ttctgatccc gcagtgggtg tactggtgtg gccgttgtca
21451 gcgcgttcag cgccgggggtt aagcgcacaa gcggcccgtc tgtaccagca
21501 tctcagcgcc caccccgatc tggatccgat cgatgtagcc cacagcctgg
21551 ctaccacacg cagccaccac ccccaccgcg ccaccatcac caccagcatt
21601 gagcaccaca gcgaaaacaa ccacgacaca accgatgcgc tggccgcact
21651 gcacgccctg gccaacaacg gcacacaccc cctgctgagc agaggcctgc
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21751 agtcaatacc ccggcatggg cgcagatctc taccgccaat tccccgtgtt
21801 cgcccacgcc ctcgacgagg tcgctgcggc gctgaacccg catctcgatg
21851 ttgcgttgct tgaggtgatg ttcagccaac aagacactgc catggcgcaa
21901 ctgctggacc agaccttcta tgcacaaccg gcgttgttcg cgctgggaac
21951 cgctctacat cgattgttca cccacgccgg tatccacccg gactacctgc
22001 taggccactc catcggagaa ctcaccgcgg catacgccgc cggtgtgctg
22051 tcactgcaag acgcagccac cttggtcaca agccgaggac gactgatgca
22101 atcctgcacg cccggcggga cgatgctcgc actacaagcc agcgaagcag
22151 aagtacaacc gctgcttgaa ggcctagacc acgccgtgtc catcgccgcg
22201 atcaacggag caacgtcgat cgtactgtca ggagatcacg acagcctcga
22251 acaaatcggc gagcacttca ttacccaaga tcgacgtacc acccgactgc
22301 aggtcagtca cgctttccac tctccacata tggaccccat cctcgaacaa
22351 ttccgccaga tcgcggccca actcaccttc agcgcaccca ccctgcccat
22401 cttgtccaac ctcaccgggc agatcgcccg ccacgaccaa ctcgcctcac
22451 ctgactattg gacccaacag ctacgtaaca ctgtccggtt ccatgacact
22501 gtcgctgccc tgctcggggc gggtgagcag gttttcctgg aactttcacc
22551 tcacccggtg ttgacacaag cgatcaccga caccgtcgaa caagccggcg
22601 gcggcggcgc agcagtgcca gctctacgca aggatcgccc tgatgctgtc
22651 gcgttcgctg cagcactcgg ccagctgcac tgccatggca tcagcccatc
22701 ctggaatgtt ctttactgcc aggcccgccc cctcacactg cccacctacg
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FIGURE 8(continued)

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22751 ctttccagca tcagcgttac tggctgctgc ccaccgctgg tgatttcagc
22801 ggggccaata cccacgccat gcatccgctg ctagacaccg ccaccgaact
22851 ggccgaaaac cgcggatggg tgttcaccgg ccggatcagc ccacgcaccc
22901 aaccatggct aaacgaacac gccgtcgaat cagccgtgct gttcccaggc
22951 accggatttg tcgagctagc gctgcatgtc gctgaccgtg ccggatattc
23001 ctcggtcaac gaactgatcg tgcacacccc cctgctgctc gctggccacg
23051 acaccgcgga tctacagatc accgtcaccg acaccgatga catgggccgg
23101 cagtctctta acatccactc gcgcccacat atcggccatg acaacaccac
23151 caccggcgat gaacaacccg agtgggtcct gcatgccagc gcagtcctga
23201 ccgcacaaac caccgaccac aaccacctcc ccctaacgcc tgtgccgtgg
23251 cctccacccg gcacagccgc gatcgaggtg gatgacttct acgacgacct
23301 ggctgcacag ggctacaact acggcccgac attccaaggt gtgcaacgga
23351 tatggcgtga ccacgccaca cccgatgtca tctacgccga agttgaacta
23401 cccgaagaca ccgacatcga cggctacggc atccacccccg ccctattcga
23451 cgccgcttta cacccccctac tcgccctgac ccaaccccccc accaacgaca
23501 ccgatgacac caacaccgca gacaccggtg accaggtgcg gctgccctac
23551 gcctttaccg gcatcagttt gcacgccacc cacgccaccc gattgcgggt
23601 acggctgacc cgtaccggcg ccgatgccat caccgtgcac accagtgaca
23651 ccaccggagc cccggtggcg atcatcgact cattgatcac ccgcccccctc
23701 accaccgcca cagggtctgc tccggcaacc acagcagctg gcctactaca
23751 cctgagctgg ccaccacacc ctgacaccac gaccgacacc gacaccgaca
23801 ccgatgccct gcggtatcag gtgatcgccg aacccactca acaactgccc
23851 cgctacctgc acgacctaca caccagcacc gacctgcaca ccagcaccac
23901 cgaagcagac gtggttgtgt ggccggtacc ggtgcccagc aacgaagagc
23951 tccaggcaca ccaagcatcc gacaccgcgg tgtcttctcg gatacacacc
24001 ctgacccgcc aaacacttac cgtggtgcag gactggctca ctcacccccga
24051 caccaccggc acccgactgg tcatcgtgac ccgccacggc gtcagcacca
24101 gtgcccacga cccggtcccc gacctagccc acgccgcagt gtggggcctg
24151 atccgcagcg cccaaaacga acaccccgga cgcttcacac tgctcgacac
24201 cgacgacaac accaacagcg acaccctcac caccgcccta accctgccaa
24251 cccgcgaaaa ccaactggcc atacgccgcg acaccatcca catcccccgc
24301 ctgacccgac acagcagtga cggtgcgctc actgcgccgg tggtggtaga
24351 tcctgagggc acggtgttga tcaccggggg gaccgggacg ctgggtgcct
24401 tgttcgccga gcatctggtt tctgcccatg gtgtccggca tctgttgttg
24451 acctcgcggc gcggacctca ggcccacggt gccaccgatc tgcagcagcg
24501 gctcaccgat ctaggtgctc atgtcaccat cacggcctgc gatatcagcg
24551 accccgaagc actggccgcc ctggtcaatt cagtgcccac acaacaccgt
24601 ttaaccgcgg tagtgcacac cgccgcggta ttggccgaca ccccggtcac
24651 cgagttgacc ggcgatcaac tcgaccaggt gctggcccccc aaaatcgacg
24701 cggcatggca gctgcaccaa ctcacctacg aacacaacct gtctgcattc
24751 atcatgttct cgtccatggc cggaatgata ggcagtcccg gtcagggtaa
24801 ctacgcggca gccaacaccg cgttagatgc tctcgccgac taccgccacc
24851 gcctgggctt gcccgcgacc agcctggcct ggggctactg gcagactcac
24901 accggtctca ccgcgcatct aaccgatgta gatctagccc gcatgacccg
24951 cctgggtttg atgcccatcg ccaccagcca cggactggcc ctgttcgatg
25001 ccgccctcgc caccggacag cccgtttcga tacccgcccc gatcaacacc
25051 cacaccctgg cccgacacgc ccgcgacaac accctggccc cgatcctgtc
25101 tgcgctgatc accacaccac ggcgccgggc ggcctctgcc gcaaccgatc
25151 tcgctgcccg cctcaacgga cttagccccc aacagcaaca acaaacactg
25201 gccaccctcg tggccgcggc caccgccacc gtgctgggcc accacacccc
25251 cgaaagcatc agcccagcca ccgcgttcaa agacctcgga atcgattcgc
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25351 ctgcccccca ccctcatctt cgatcacccc acaccccatg cggtggccga
25401 gcatctgctt gaacagatcc ctggcatcgg tgccctggtg ccggctccgg
25451 tggtgatcgc agctggtcgt accgaggagc cggtggcggt ggtggggatg
25501 gcgtgtcgtt tccccggtgg tgtcgcatca gcggatcagt tgtgggactt
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FIGURE 8(continued)

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25551 ggtgatcgct ggccgtgatg tggtgggtaa ttttccggcc gatcggggtt
25601 gggatgtgga gggactgttt gatcccgatc cggacgcggt cggcaaaacc
25651 tacacccgtt acggcgcgtt ccttgacgat gcggcaggtt ttgatgccgg
25701 gttctttggg atctctccac gggaggcacg cgcgatggac ccccagcagc
25751 ggctgctgct ggaggtgtgc tgggaagcgc tagaaaccgc gggtattccc
25801 gcgcacacct tggccggcac ctccaccggg gtattcgccg gagcctgggc
25851 ccagtcctac ggcgccacca actccgatga cgctgagggg tatgcgatga
25901 ccggcggcgc gactagcgtc atgtccggcc gtatcgccta caccttgggc
25951 ctagaaggtc cagcgatcac cgttgacacc gcctgctcgt catcgctggt
26001 ggcaattcac ctggcctgcc aatccttacg caacaacgaa tcccagctag
26051 cactggccgg cggcgtcacc gtgatgagca cacctgcggt tttcaccgag
26101 ttctcccgcc aacgcggcct ggccccagat ggacgctgca aagccttcgc
26151 cgctaccgcc gatggcaccg gctttggtga aggcgccgcg gtcttggtcc
26201 ttgaacggct ctccgaggcc cgccgcaaca accacccggt ccttgcgatc
26251 gtcgctggat cggcgatcaa ccaagacggc gcatccaacg gactgaccgc
26301 accccacggc ccgtcacaac aacgcgtcat caaccaagca ctagccaacg
26351 ccggcctcac ccacgaccag gtcgacgccg tcgaagccca cggcaccggc
26401 accacactgg gtgaccccat cgaagccagc gccctacacg ccacctacgg
26451 ccaccaccac acgcccgatc aaccgctttg gctgggatcc atcaaatcca
26501 acatcggcca cacccaagcc gccgccggcg ccgccggtgt ggtcaagatg
26551 atccaagcca tcacccacgc caccttgccc gccaccttgc acgtcgacca
26601 acccagcccc cacatcgact ggtccagcgg cacagtccga ctcctaaccg
26651 agcccatcca atggcccaac accgaccacc cccgcaccgc ggcggtgtcc
26701 tcattcggca tcagcggcac caacgcccac ctcatcctcc aacaacccc
26751 caccccgac accacacaaa ccccaacac cacaacaggt tctgatcccg
26801 cagtgggttc tgatcccgca gtgggtgtac tggtgtggcc gttgtcagcg
26851 cgttcagcgc cggggttaag cgcacaagcg gcccgtctgt accagcatct
26901 cagcgcccac cccgatctgg atccgatcga tgtagcccac agcctggcta
26951 ccacacgcag ccaccacccc caccgcgcca ccatcaccac cagcattgag
27001 caccacagcg aaaacaacca cgacacaacc gatgcgctgg ccgcactgca
27051 cgccctggcc aacaacggca cacaccccct gctgagcaga ggcctgctga
27101 ccccacaggg ccccggcaaa acagtgttcg tgttccccgg acagggcagt
27151 caataccccg gcatgggcgc agatctctac cgccaattcc ccgtgttcgc
27201 ccacgccctc gacgcatgcg acgcagcgtt acagcctttc actggatggt
27251 cggtgctagc tgtgttacac gacgaacccg aggccccgtc gttggagcgg
27301 gtcgatgtgg tccagcctgt gttgttctcg gtgatggtgt cgttagccgc
27351 actctggcgg tgggccggaa tcaccccga tgcagtcatc ggccactccc
27401 agggcgagat cgccgcggca catgtggccg gagccctgac cttgcccgaa
27451 gcagctgcgg tagtggcttt gcgcagccgt gtcttgaccg acctggccgg
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27551 tgctggcacg gtgggacggc aagatcactg tcgccgcagt taacggcccc
27601 gctagcgctg tggtctccgg cgataccaca gcgatcaccg aattgctgat
27651 tacctgcgaa cacgaaaaca tcgacgctcg cgctatcccg gtggactacc
27701 cctctcattc cccctatatg gaacacatcc gccatcagtt cctcgacgag
27751 ctacccgagc tgacaccgcg gccatcaacc atcgcgatgt attccaccgt
27801 cgacggcgaa cctcacgaca ccgcctacga caccaccaca atgaccgcgg
27851 actactggta ccgcaacatc cgtaacactg tccggttcca tgacactgtc
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28101 gaatgttctt tactgccagg cccgcccct cacactgccc acctacgctt
28151 tccagcatca gcgttactgg ctgctgccca ccgctggtga tttcagcggg
28201 gccaataccc acgccatgca tccgctgcta gacaccgcca ccgaactggc
28251 cgaaaaccgc ggatgggtgt tcaccggccg gatcagccca cgcacccaac
28301 catggctaaa cgaacacgcc gtcgaatcag ccgtgctgtt cccaggcacc
28351 ggatttgtcg agctagcgct gcatgtcgct gaccgtgccg gatattcctc
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FIGURE 8(continued)

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28401 ggtcaacgaa ctgatcgtgc acacccccct gctactcgct ggccacgaca
28451 ccgcggatct acagatcacc gtcaccgaca ccgatgacat gggccggcag
28501 tctcttaaca tccactcgca cccacatatc ggccatgaca acaccaccac
28551 cggcgatgaa caacccgagt gggtcctgca tgccagcgca gtcctgaccg
28601 cacaaaccac cgaccacaac cacctccccc taacgcctgt gccgtggcct
28651 ccacccggca cagccgcgat cgaggtggat gacttctacg acgacctggc
28701 tgcacagggc tacaactacg gcccgacatt ccaaggtgtg caacggatat
28751 ggcgtgacca cgccacaccc gatgtcatct acgccgaagt tgaactaccc
28801 gaagacaccg acatcgacgg ctacggcatc cacccccgccc tattcgacgc
28851 cgctttacac cccctactcg ccctgaccca accccccacc aacgacaccg
28901 atgacaccaa caccgcagac accggtgacc aggtgcggct gccctacgcc
28951 tttaccggca tcagtttgca cgccacccac gccacccgat tgcgggtacg
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29051 ccggagcccc ggtggcgatc atcgactcat tgatcacccg cccccctcacc
29101 accgccacag ggtctgctcc ggcaaccaca gcagctggcc tactacacct
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29401 acccgccaaa cacttaccgt ggtgcaggac tggctcactc accccgacac
29451 caccggcacc cgactggtca tcgtgacccg ccacggcgtc agcaccagtg
29501 cccacgaccc ggtccccgac ctagcccacg ccgcagtgtg gggcctgatc
29551 cgcagcgccc aaaacgaaca ccccggacgc ttcacactgc tcgacaccga
29601 cgacaacacc aacagcgaca ccctcaccac cgccctaacc ctgccaaccc
29651 gcgaaaacca actggccata cgccgcgaca ccatccacat cccccgcctg
29701 acccgacaca gcagtgacgg tgcgctcact gcgccggtgg tggtagatcc
29751 tgagggcacg gtgttgatca ccggggggac cgggacgctg ggtgccttgt
29801 tcgccgagca tctggtttct gcccatggtg tccggcatct gttgttgacc
29851 tcgcggcgcg gacctcaggc ccacggtgcc accgatctgc agcagcggct
29901 caccgatcta ggtgctcatg tcaccatcac ggcctgcgat atcagcgacc
29951 ccgaagcact ggccgccctg gtcaattcag tgcccacaca acaccgttta
30001 accgcggtag tgcacaccgc cgcggtattg ccgacaccc cggtcaccga
30051 gttgaccggc gatcaactcg accaggtgct ggcccccaaa atcgacgcgg
30101 catggcagct gcaccaactc acctacgaac acaacctgtc tgcattcatc
30151 atgttctcgt ccatggccgg aatgataggc agtcccggtc agggtaacta
30201 cgcggcagcc aacaccgcgt tagatgctct cgccgactac cgccaccgcc
30251 tgggcttgcc cgcgaccagc ctggcctggg gctactggca gactcacacc
30301 ggtctcaccg cgcatctaac cgatgtagat ctagcccgca tgacccgcct
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30401 ccctcgccac cggacagccc gtttcgatac ccgccccgat caacacccac
30451 accctggccc gacacgcccg cgacaacacc ctggccccga tcctgtctgc
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30551 ctgcccgcct caacggactt agcccccaac agcaacaaca aacactggcc
30601 accctcgtgg ccgcggccac cgccaccgtg ctgggccacc acacccccga
30651 aagcatcagc ccagccaccg cgttcaaaga cctcggaatc gattcgctga
30701 ccgcccttga actgcgcaac accctcaccc acaacaccgg cctggatctg
30751 cccccacc tcatcttcga tcaccccaca ccccatgcgg tggccgagca
30801 tctgcttgaa cagatccctg gcatcggtgc cctggtgccg gctccggtgg
30851 tgatcgcagc tggtcgtacc gaggagccgg tggcggtggt ggggatggcg
30901 tgtcgtttcc ccggtggtgt cgcatcagcg gatcagttgt gggacttggt
30951 gatcgctggc cgtgatgtgg tgggtaattt tccggccgat cggggttggg
31001 atgtggaggg actgtttgat cccgatccgg acgcggtcgg caaaacctac
31051 acccgttacg gcgcgttcct tgacgatgcg gcaggttttg atgccgggtt
31101 ctttgggatc tctccacggg aggcacgcgc gatggacccc cagcagcggc
31151 tgctgctgga ggtgtgctgg gaagcgctag aaaccgcggg tattcccgcg
31201 cacaccttgg ccggcacctc caccgggta ttcgccggag cctgggccca
```

FIGURE 8(continued)

```
31251 gtcctacggc gccaccaact ccgatgacgc tgaggggtat gcgatgaccg
31301 gcggcgcgac tagcgtcatg tccggccgta tcgcctacac cttgggccta
31351 gaaggtccag cgatcaccgt tgacaccgcc tgctcgtcat cgctggtggc
31401 aattcacctg gcctgccaat ccttacgcaa caacgaatcc cagctagcac
31451 tggccggcgg cgtcaccgtg atgagcacac ctgcggtttt caccgagttc
31501 tcccgccaac gcggcctggc cccagatgga cgctgcaaag ccttcgccgc
31551 taccgccgat ggcaccggct ttggtgaagg cgccgcggtc ttggtccttg
31601 aacggctctc cgaggcccgc cgcaacaacc acccggtcct tgcgatcgtc
31651 gctggatcgg cgatcaacca agacggcgca tccaacggac tgaccgcacc
31701 ccacggcccg tcacaacaac gcgtcatcaa ccaagcacta gccaacgccg
31751 gcctcaccca cgaccaggtc gacgccgtcg aagcccacgg caccggcacc
31801 acactgggtg accccatcga agccagcgcc ctacacgcca cctacggcca
31851 ccaccacacg cccgatcaac cgctttggct gggatccatc aaatccaaca
31901 tcggccacac ccaagccgcc gccggcgccg ccggtgtggt caagatgatc
31951 caagccatca cccacgccac cttgcccgcc accttgcacg tcgaccaacc
32001 cagcccccac atcgactggt ccagcggcac agtccgactc ctaaccgagc
32051 ccatccaatg gcccaacacc gaccacccccc gcaccgcggc ggtgtcctca
32101 ttcggcatca gcggcaccaa cgcccacctc atcctccaac aaccccccac
32151 ccccgacacc acacaaaccc caacaccac aacaggttct gatcccgcag
32201 tgggttctga tcccgcagtg ggtgtactgg tgtggccgtt gtcagcgcgt
32251 tcagcgccgg ggttaagcgc acaagcggcc cgtctgtacc agcatctcag
32301 cgcccacccc gatctggatc cgatcgatgt agcccacagc ctggctacca
32351 cacgcagcca ccaccccccac cgcgccacca tcaccaccag cattgagcac
32401 cacagcgaaa acaaccacga cacaaccgat gcgctggccg cactgcacgc
32451 cctggccaac aacggcacac accccctgct gagcagaggc ctgctgaccc
32501 cacagggccc cggcaaaaca gtgttcgtgt tccccggaca gggcagtcaa
32551 taccccggca tgggcgcaga tctctaccgc caattccccg tgttcgccca
32601 cgccctcgac gcatgcgacg cagcgttaca gcctttcact ggatggtcgg
32651 tgctagctgt gttacacgac gaacccgagg ccccgtcgtt ggagcgagtc
32701 gatgtggtcc agcctgtgtt gttctcggtg atggtgtcgt tagccgcact
32751 ctggcggtgg gccggaatca cccccgatgc agtcatcggc cactcccagg
32801 gcgagatcgc cgcggcacat gtggccggag ccctgacctt gcccgaagca
32851 gctgcggtag tggctttgcg cagccgtgtc ttgaccgacc tggccggtgc
32901 cggtgccatg gcttcagtgc tatcgcccga ggaaccactg acccagctgc
32951 tggcacggtg ggacggcaag atcactgtcg ccgcagttaa cggccccgct
33001 agcgctgtgg tctccggcga taccacagcg atcaccgaat tgctgattac
33051 ctgcgaacac gaaaacatcg acgctcgcgc tatcccggtg gactacccct
33101 ctcattcccc ctatatggaa cacatccgcc atcagttcct cgacgagcta
33151 cccgagctga caccgcggcc atcaaccatc gcgatgtatt ccaccgtcga
33201 cggcgaacct cacgacaccg cctacgacac caccacaatg accgcggact
33251 actggtaccg caacatccgt aacactgtcc ggttccatga cactgtcgct
33301 gccctgctcg gggcgggtga gcaggttttc ctggaacttt cacctcaccc
33351 ggtgttgaca caagcgatca ccgacaccgt cgaacaagcc ggcggcggcg
33401 gcgcagcagt gccagctcta cgcaaggatc gccctgatgc tgtcgcgttc
33451 gctgcagcac tcggccagct gcactgccat ggcatcagcc catcctggaa
33501 tgttctttac tgccaggccc gccccctcac actgcccacc tacgctttcc
33551 agcatcagcg ttactggctg ctgcccaccg ctggtgattt cagcggggcc
33601 aatacccacg ccatgcatcc gctgctagac accgccaccg aactggccga
33651 aaaccgcgga tgggtgttca ccggccggat cagcccacgc acccaaccat
33701 ggctaaacga acacgccgtc gaatcagccg tgctgttccc aggcaccgga
33751 ttcgtcgagc tagcgctgca tgtcgctgac cgtgccggat attcctcggt
33801 caacgaactg atcgtgcaca ccccccctgct actcgctggc cacgacaccg
33851 cggatctaca gatcaccgtc accgacaccg atgacatggg ccggcagtct
33901 cttaacatcc actcgcgccc acatatcggc catgacaaca ccaccaccgg
33951 cgatgaacaa cccgagtggg tcctgcatgc cagcgcagtc ctgaccgcac
34001 aaaccaccga ccacaaccac ctccccctaa cgcctgtgcc gtggcctcca
34051 cccggcacag ccgcgatcga ggtggatgac ttctacgacg acctggctgc
```

FIGURE 8(continued)

```
34101 acagggctac aactacggcc cgacattcca aggtgtgcaa cggatatggc
34151 gtgaccacgc cacacccgat gtcatctacg ccgaagttga actacccgaa
34201 gacaccgaca tcgacggcta cggcatccac cccgccctat tcgacgccgc
34251 tttacacccc ctactcgccc tgacccaacc ccccaccaac gacaccgatg
34301 acaccaacac cgcagacacc ggtgaccagg tgcggctgcc ctacgccttt
34351 accggcatca gtttgcacgc cacccacgcc acccgattac gggtacggct
34401 gacccgtacc ggcgccgatg ccatcaccgt gcacaccagt gacaccaccg
34451 gagccccggt ggcgatcatc gactcattga tcacccgccc cctcaccacc
34501 gccacaggt ctgctccggc aaccacagca gctggcctac tacacctgag
34551 ctggccacca caccctgaca ccacgaccga caccgacacc gacaccgatg
34601 ccctgcggta tcaggtgatc gccgaaccca ctcaacaact gccccgctac
34651 ctgcacgacc tacacaccag caccgacctg cacaccagca ccaccgaagc
34701 agacgtggtt gtgtggccgg taccggtgcc cagcaacgaa gagctccagg
34751 cacaccaagc atccgacacc gcggtgtctt ctcggataca caccctgacc
34801 cgccaaacac ttaccgtggt gcaggactgg ctcactcacc ccgacaccac
34851 cggcacccga ctggtcatcg tgacccgcca cggcgtcagc accagtgccc
34901 acgacccggt ccccgaccta gcccacgccg cagtgtgggg cctgatccgc
34951 agcgcccaaa acgaacaccc cggacgcttc acactgctcg acaccgacga
35001 caacaccaac agcgacaccc tcaccaccgc cctaaccctg ccaacccgcg
35051 aaaaccaact ggccatacgc cgcgacacca tccacatccc ccgcctgacc
35101 cgacacagca gtgacggtgc gctcactgcg ccggtggtgg tagatcctga
35151 gggcacggtg ttgatcaccg gggggaccgg gacgctgggt gccttgttcg
35201 ccgagcatct ggtttctgcc catggtgtcc ggcatctgtt gttgacctcg
35251 cggcgcggac ctcaggccca cggtgccacc gatctgcagc agcggctcac
35301 cgatctaggt gctcatgtca ccatcacggc ctgcgatatc agcgaccccg
35351 aagcactggc cgccctggtc aattcagtgc ccacacaaca ccgtttaacc
35401 gcggtagtgc acaccgccgc ggtattggcc gacaccccgg tcaccgagtt
35451 gaccggcgat caactcgacc aggtgctggc ccccaaaatc gacgcggcat
35501 ggcagctgca ccaactcacc tacgaacaca acctgtctgc attcatcatg
35551 ttctcgtcca tggccggaat gataggcagt cccggtcagg gtaactacgc
35601 ggcagccaac accgcgttag atgctctcgc cgactaccgc caccgcctgg
35651 gcttgcccgc gaccagcctg gcctggggct actggcagac tcacaccggt
35701 ctcaccgcgc atctaaccga tgtagatcta gcccgcatga cccgcctggg
35751 tttgatgccc atcgccacca gccacggact ggccctgttc gatgccgccc
35801 tcgccaccgg acagcccgtt tcgatacccg ccccgatcaa cacccacacc
35851 ctggcccgac acgcccgcga caacaccctg gccccgatcc tgtctgcgct
35901 gatcaccaca ccacggcgcc gggcggcctc tgccgcaacc gatctcgctg
35951 cccgcctcaa cggacttagc ccccaacagc aacaacaaac actggccacc
36001 ctcgtggccg cggccaccgc caccgtgctg ggccaccaca cccccgaaag
36051 catcagccca gccaccgcgt tcaaagacct cggaatcgat tcgctgaccg
36101 cccttgaact gcgcaacacc ctcacccaca caccggcct ggatctgccc
36151 cccaccctca tcttcgatca ccccacaccc catgcggtgg ccgagcatct
36201 gcttgaacag atccctggca tcggtgccct ggtgccggct ccggtggtga
36251 tcgcagctgg tcgtaccgag gagccggtgg cggtggtggg gatggcgtgt
36301 cgtttccccg gtggtgtcgc atcagcggat cagttgtggg acttggtgat
36351 cgctggccgt gatgtggtgg gtaattttcc ggccgatcgg ggttgggatg
36401 tggagggact gtttgatccc gatccggacg cggtcggcaa aacctacacc
36451 cgttacggcg cgttccttga cgatgcggca ggttttgatg ccgggttctt
36501 tgggatctct ccacgggagg cacgcgcgat ggacccccag cagcggctgc
36551 tgctggaggt gtgctgggaa gcgctagaaa ccgcgggtat tcccgcgcac
36601 accttggccg gcacctccac cggggtattc gccggagcct gggcccagtc
36651 ctacggcgcc accaactccg atgacgctga ggggtatgcg atgaccggcg
36701 gcgcgactag cgtcatgtcc ggccgtatcg cctacacctt gggcctagaa
36751 ggtccagcga tcaccgttga caccgcctgc tcgtcatcgc tggtggcaat
36801 tcacctggcc tgccaatcct tacgcaacaa cgaatcccag ctagcactgg
```

FIGURE 8(continued)

```
36851 ccggcggcgt caccgtgatg agcacacctg cggttttcac cgagttctcc
36901 cgccaacgcg gcctggcccc agatggacgc tgcaaagcct tcgccgctac
36951 cgccgatggc accggctttg gtgaaggcgc cgcggtcttg gtccttgaac
37001 ggctctccga ggcccgccgc aacaaccacc cggtccttgc gatcgtcgct
37051 ggatcggcga tcaaccaaga cggcgcatcc aacggactga ccgcacccca
37101 cggcccgtca caacaacgcg tcatcaacca agcactagcc aacgccggcc
37151 tcacccacga ccaggtcgac gccgtcgaag cccacggcac cggcaccaca
37201 ctgggtgacc ccatcgaagc cagcgcccta cacgccacct acggccacca
37251 ccacacgccc gatcaaccgc tttggctggg atccatcaaa tccaacatcg
37301 gccacaccca agccgcgcc ggcgccgccg gtgtggtcaa gatgatccaa
37351 gccatcaccc acgccacctt gcccgccacc ttgcacgtcg accaacccag
37401 cccccacatc gactggtcca gcggcacagt ccgactccta accgagccca
37451 tccaatggcc caacaccgac cacccccgca ccgcggcggt gtcctcattc
37501 ggcatcagcg gcaccaacgc ccacctcatc ctccaacaac ccccacccc
37551 cgacaccaca caaaccccca acaccacaac aggttctgat cccgcagtgg
37601 gttctgatcc cgcagtgggt gtactggtgt ggccgttgtc agcgcgttca
37651 gcgccggggt taagcgcaca agcggcccgt ctgtaccagc atctcagcgc
37701 ccaccccgat ctggatccga tcgatgtagc ccacagcctg gctaccacac
37751 gcagccacca cccccaccgc gccaccatca ccaccagcat tgagcaccac
37801 agcgaaaaca accacgacac aaccgatgcg ctggccgcac tgcacgccct
37851 ggccaacaac ggcacacacc ccctgctgag cagaggcctg ctgaccccac
37901 agggccccgg caaaacagtg ttcgtgttcc ccggacaggg cagtcaatac
37951 cccggcatgg cgcagatct ctaccgccaa ttccccgtgt tcgcccacgc
38001 cctcgacgag gtcgctgcgg cgctgaaccc gcatctcgat gttgcgttgc
38051 ttgaggtgat gttcagccaa caagacactg ccatggcgca actgctggac
38101 cagaccttct atgcacaacc ggcgttgttc gcgctgggaa ccgctctaca
38151 tcgattgttc acccacgccg gtatccaccc ggactacctg ctaggccact
38201 ccatcggaga actcaccgcg gcatacgccg ccggtgtgct gtcactgcaa
38251 gacgcagcca ccttggtcac aagccgagga cgactgatgc aatcctgcac
38301 gcccggcggg acgatgctcg cactacaagc cagcgaagca gaagtacaac
38351 cgctgcttga aggcctagac cacgccgtgt ccatcgccgc gatcaacgga
38401 gcaacgtcga tcgtactgtc aggagatcac gacagcctcg aacaaatcgg
38451 cgagcacttc attacccaag atcgacgtac cacccgactg caggtcagtc
38501 acgctttcca ctctccacat atggacccca tcctcgaaca attccgccag
38551 atcgcggccc aactcacctt cagcgcaccc accctgccca tcttgtccaa
38601 cctcaccggg cagatcgccc gccacgacca actcgcctca cctgactatt
38651 ggacccaaca gctacgtaac actgtccggt tccatgacac tgtcgctgcc
38701 ctgctcgggg cgggtgagca ggttttcctg gaactttcac ctcacccggt
38751 gttgacacaa gcgatcaccg acaccgtcga acaagccggc ggcggcggcg
38801 cagcagtgcc agctctacgc aaggatcgcc ctgatgctgt cgcgttcgct
38851 gcagcactcg gccagctgca ctgccatggc atcagcccat cctggaatgt
38901 tctttactgc caggcccgcc ccctcacact gcccacctac gctttccagc
38951 atcagcgtta ctggctgctg cccaccgctg gtgatttcag cggggccaat
39001 acccacgcca tgcatccgct gctagacacc gccaccgaac tggccgaaaa
39051 ccgcggatgg gtgttcaccg gccggatcag cccacgcacc caaccatggc
39101 taaacgaaca cgccgtcgaa tcagccgtgc tgttcccagg caccggattt
39151 gtcgagctag cgctgcatgt cgctgaccgt gccggatatt cctcggtcaa
39201 cgaactgatc gtgcacaccc ccctgctact cgctggccac gacaccgcgg
39251 atctacagat caccgtcacc gacaccgatg acatgggccg gcagtctctt
39301 aacatccact cgcgcccaca tatcggccat gacaacacca ccaccggcga
39351 tgaacaaccc gagtgggtcc tgcatgccag cgcagtcctg accgcacaaa
39401 ccaccgacca caaccacctc cccctaacgc ctgtgccgtg gcctccaccc
39451 ggcacagccg cgatcgaggt ggatgacttc tacgacgacc tggctgcaca
39501 gggctacaac tacggcccga cattccaagg tgtgcaacgg atatggcgtg
39551 accacgccac acccgatgtc atctacgccg aagttgaact acccgaagac
39601 accgacatcg acggctacgg catccacccc gccctattcg acgccgcttt
39651 acacccccta ctcgccctga cccaaccccc caccaacgac accgatgaca
```

FIGURE 8(continued)

```
39701 ccaacaccgc agacaccggg gaccaggtgc ggctgccta cgcctttacc
39751 ggcatcagtt tgcacgccac ccacgccacc cgattacggg tacggctgac
39801 ccgtaccggc gccgatgcca tcaccgtgca caccagtgac accaccggag
39851 ccccggtggc gatcatcgac tcattgatca cccgcccct caccaccgcc
39901 acagggtctg ctccggcaac cacagcagct ggcctactac acctgagctg
39951 gccaccacac cctgacacca cgaccgacac cgacaccgac accgatgccc
40001 tgcggtatca ggtgatcgcc gaacccactc aacaactgcc ccgctacctg
40051 cacgacctac acaccagcac cgacctgcac accagcacca ccgaagcaga
40101 cgtggttgtg tggccggtac cggtgcccag caacgaagag ctccaggcac
40151 accaagcatc cgacaccgcg gtgtcttctc ggatacacac .cctgacccgc
40201 caaacactta ccgtggtgca ggactggctc actcacccg acaccaccgg
40251 cacccgactg gtcatcgtga cccgccacgg cgtcagcacc agtgcccacg
40301 acccggtccc cgacctagcc cacgccgcag tgtggggcct gatccgcagc
40351 gcccaaaacg aacaccccgg acgcttcaca ctgctcgaca ccgacgacaa
40401 caccaacagc gacaccctca ccaccgccct aaccctgcca acccgcgaaa
40451 accaactggc catacgccgc gacaccatcc acatcccccg cctgacccga
40501 cacagcagtg acggtgcgct cactgcgccg gtggtggtag atcctgaggg
40551 cacggtgttg atcaccgggg ggaccgggac gctgggtgcc ttgttcgccg
40601 agcatctggt ttctgcccat ggtgtccggc atctgttgtt gacctcgcgg
40651 cgcggacctc aggcccacgg tgccaccgat ctgcagcagc ggctcaccga
40701 tctaggtgct catgtcacca tcacggcctg cgatatcagc gaccccgaag
40751 cactggccgc cctggtcaat tcagtgccca cacaacaccg tttaaccgcg
40801 gtagtgcaca ccgccgcggt attggccgac accccggtca ccgagttgac
40851 cggcgatcaa ctcgaccagg tgctggcccc caaaatcgac gcggcatggc
40901 agctgcacca actcacctac gaacacaacc tgtctgcatt catcatgttc
40951 tcgtccatgg ccggaatgat aggcagtccc ggtcagggta actacgcggc
41001 agccaacacc gcgttagatg ctctcgccga ctaccgccac cgcctgggct
41051 tgcccgcgac cagcctggcc tggggctact ggcagactca caccggtctc
41101 accgcgcatc taaccgatgt agatctagcc cgcatgaccc gcctgggttt
41151 gatgcccatc gccaccagcc acggactggc cctgttcgat gccgccctcg
41201 ccaccggaca gcccgtttcg ataccgcccc cgatcaacac ccacaccctg
41251 gcccgacacg cccgcgacaa caccctggcc ccgatcctgt ctgcgctgat
41301 caccacacca cggcgccggg cggcctctgc cgcaaccgat ctcgctgccc
41351 gcctcaacgg acttagcccc caacagcaac aacaaacact ggccaccctc
41401 gtggccgcgg ccaccgccac cgtgctgggc caccacaccc ccgaaagcat
41451 cagcccagcc accgcgttca aagacctcgg aatcgattcg ctgaccgccc
41501 ttgaactgcg caacaccctc acccacaaca ccggcctgga tctgcccccc
41551 accctcatct tcgatcaccc cacacccat gcgctaaccc aacacctgca
41601 cacccgactc acccaaagcc ataccccggt cggaccaatt gcgtccctgc
41651 taagccacgc gatcgatgag ggcaaattcc gtgccggcgc tgacctattg
41701 atggccgcat ccaatttgaa ccaaagtttc agcaatatgg ctgaactcaa
41751 ccagctcccg gccgtgacgg acatagctga cgcgtctcct gatgggctac
41801 tcaccctgat ctgcatctct acctcagaga atgagtacgc tcgcctcgct
41851 gctgcgaaca ttcattcact gaccttcgct gaaattgcgg cgcccggctt
41901 ttacgacgcg cagctgccaa attcgataga gacgtcggca gaggcgctgg
41951 caactgccat cacaggcgcc tacgcaaata cgtccattgt tctggtagcg
42001 cactccattg tctgcgagct agctcaggca acgatgacac gtctacaaga
42051 cgctgacatc gatcttgtgg gtctggttct gttggatcca ctcgaaggga
42101 ctaacagcac tgaagattat gtggagacag tcttgactcg aatcgagcat
42151 atcaatgcac cgagggtcgg agtagacggt taccttgccg ccctgggccg
42201 ctatctccaa ttccacgaag accgccgaat accaataccg gaaacgcggc
42251 acatgacact gcactcggac acgaaaattg accgtgccca aacaccaatg
42301 aacttattac aagatgaggc agcgttgacc gccctcaaaa taggaaactg
42351 gatgaacgac gtgggtgttg ccctctctgt caaccttgag tga
```

FIGURE 8(continued)

Mup045 gene
```
1     gtgatttgga atgacatcta cataagtgga acggggcgtt tcatcccgtc
51    aatgcgacca attaatgata tccaggtcga cggtgttccg aatgatcata
101   ctatcgtgca atccgattac atttccttca ccgaagccga tgagccggct
151   acagtcatgg ccacgcgcgc tgcaaccgaa gcgctgacca cttccgagct
201   agtatccgct gatgttggcg tcttgatata tgccgcgatc atcggcgatg
251   cgcatcattt tgcccccgta tgtcacgtcc aaagagtcct ccgggcgccc
301   gatgcgctgg cattcgaact ttccgcagca agtaacggtg gaacacaagg
351   catcgcagtt gctgcaaatc tcatgacagc tgacgcgtcc gtgaaagctg
401   cactcgtttg tacagcttac cggcacccga tcgatattat cagccgttgg
451   tcgtcaggta tggtattcgg cgatggagca gccgccgccg tgctttcaag
501   agacggcgga atggtgcgat tgatttccgg gtatcacggc tcactgccgg
551   agctagaggt tcttgctaga aatcgatcca acgaacgact tggctttgtg
601   ctgccagacg tcgggttagg aaaataccta actgctatag cgcggatgta
651   ccaagcggta attgcgcaag tactagaaga ggcacaaact agtattgccg
701   agatcgacta tttcggcctg atcggtatag gaattccaag tctcacagcg
751   actatcttag aacccaacgg tattccagtt aataaaacat cctggggttt
801   gctaagacaa atgggccacg ttggagcttg cgatcccctg ctgagcctta
851   accacctatt cgagcagaat gtcctcaagc gcggcgacaa agtcctactc
901   ctaggtggcg gggtggggta tcgattgaca tgcattgtgg ctgaaatcgc
951   catgaatccc ggcgtgcccg gacactccac ttcgtag
```

FIGURE 9

Mup053 gene
```
1     gtgaggcaga gattgaactg gattgcggcg cacgggttgc tccgcggcac
51    cgcgcggtta gcggcccggc tgggcgacgt gcagtcgcgg ctggtggcag
101   atcccatggt tatggcaaac ccggcgccat tttgcgatga attgagggca
151   atcggccctg tggtgtcgag ctacggcacc cacctcgtcg ttagtcatgc
201   catcgcccat gaactgcttc ggtccgaaga cttcgaagtg gtctcgctcg
251   gatcgaactt gccggcacca atgcgctggc tagagcgccg cactcgggac
301   gatacgcccc atctgctgct gccgccgtcg ttgctggccg ttgagccgcc
351   gaatcacacg cgctatcgca aggcagtgtc ctcggtgttc acgccgaaag
401   cagtagccgg attacgcgat catgtcgaag agactgcgtc ggcgctgttg
451   gatcagctca ccgaccaggc tagtgccgtc gacatcatag cccgctactg
501   ctcccagctg ccggtcgcgg tcatttgtga catcttaggc gtgcccagtc
551   gagaccgaaa ccgtgttctc aagttcggtc agctggcggg gccctgcttg
601   gattttgggc tcacatggcg tcagcaccag caggtcggc aagggctcca
651   aggactccac ttctggatca ccgagcacct cgaggaattg cggtctaacc
701   ccggtgacga tctgatgagt caaatgatcc acgcaagtga aaatggctcc
751   tcggaaacac acctccacgc aaccgaagtg cggatgatcg ggctggtgtt
801   gggcgccagt ttcgcaacaa cgatggacct gttaggcaac gggattcagg
851   tgttgttgga cgcgcccgaa ctgcgggacg cgttgagtca gcgcccgcaa
901   ctttggccca acgcggtaga agagatcctg cggttggagc caccggttca
951   gctcgccgga cgaatggctc gcaaggacac cgaggtggcg ggtaccgcaa
1001  tcaagcgggg ccagctggtg gcgatctatc tgggggcggt caaccgtgat
1051  ccgtccgtgt tcgccgatcc gcaccgcttt gacatcacac gagccaacgc
1101  caaccggcat ctcgcattct ccggtggccg ccacttctgc ctcggtgccg
1151  cccttgcccg cgtcgaaggc gaagtcggat tgagaatgct cttcgagcgc
1201  ttccctgacg tgcgcgccgc aggccccgga aatagacgtg atactcgaac
1251  tctgcggggt tggtcgcagc tgccggtcca gttgggcgca gcacgatcga
1301  tggctatccg atga
```

FIGURE 10

Mup038 gene
1   atgattgttt ggcccgaagt ggtcagcaca gtggtcgacg tcgatggcgt
51   ggcgatgtcg gcactagtcg ccgaacccga tcaggagcct aaggccgtga
101 tcttagccct gcatggcggt gccaccaacg cgcggtattt cgactgccct
151 ggccaccgcg cgctttccct gctgcacacc ggcgcggcgg cgggattcac
201 cgttgtggcc cttgaccggc ccggctacgg cagctcggcg ggtgatcccg
251 acgcgatgaa ccggccccac cagcgggccg cgctggccta tggggcgctg
301 gatcgcatcc tggcgcagcg gccacgcggg gccggggtgt tcataatggg
351 ccattcaaac ggatgcgaac tggcgatgtg gatggccacc gagacgcgcg
401 gtgccgagct gctcggcatc gagttggctg gtaccggctg gcattatcag
451 cccgaggccc gagaaatcct gacaacggcc actggtgaac atcggtgggt
501 gggcctctat gatttgctct ggcatccgca gcggctatac ccgcccgagg
551 tcctcaacgc ggccatcatt tcttcgtccg ccccggccta cgaggagcag
601 atgatggccg actggacccg ccgaaccttc ctggagctag tccctgctgt
651 gcgtgtgccg gtacatttca gcatcgccca acacgaaaag gtttggcagc
701 gcgatagttc agcgctagat gaaatcgccg tcctgttctc tggcgcgccg
751 cggttcatcc tgcatgaaca acccgaggcc ggacacaaca tcagcctggg
801 ccacaccgcc ggcgactacc acacgacagt cctgtcgttt gtccagcaat
851 gtctggccga acggttggcc aacgcgcaac aagatgtcga tctcgcggcc
901 gagtga

FIGURE 11

MlsA1 protein
```
VIFGDAHQNCRGGRVLGDAVAVVGMSCRVPGASDPDALWALLRDGISVVDEIPSARWNLD
GLVAHRLTDEQRSALRHGAFLDDVEGFDAAFFGINPSEAGSMDPQQRLMLELTWAALEDA
RIVPEHLSGSSSGVFTGAMSDDYTTAVTYRAAMTAHTFAGTHRSLIANRVSYTLGLRGPS
LVIDTGQSSSLVAVHVAMESLRREETSLAIAGGIHLNLSLAAALSAAHFGALSPDGRCYT
FDARANGYVRGEGGGVVVLKRLNDALADGNHIYCVIRGSSVNNDGATQDLTAPGVDGQRQ
ALLQAYERAEIDPSEVQYVELHGTGTRLGDPTEAHSLHSVFGTSTVPRSPLLVGSIKTNI
GHLEGAAGILGLIKTALAVHHRQLPPSLNYTVPNPKIPLEQLGLRVQTTLSEWPDLDKPL
TAGVSSFSMGGTNAHLILQQPPTPDTTQTPNPTTGSDPAVGSDPAVGVLVWPLSARSAPG
LSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEHHSENNHDTTDALAA
LHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYRQFPVFAHALDEVAA
ALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALFALGTALHRLFTHAGIHPDYLLGH
SIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGGTMLALQASEAEVQPLLEGLDHAV
SIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRLQVSHAFHSPHMDPILEQFRQIAA
QLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRNTVRFHDTVAALLGAGEQVFLELS
PHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCHGISPSWNVLYCQAR
PLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRGWVFTGRISPRTQPW.
LNEHAVESAVLFPNTGFVELALHVADRAGYSSVNELIVHTPLLLAGHDTADLQITVTDTD
DMGRQSLNIHSHPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNHLPLTPVPWPPPGTA
AIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPEDTDIDGYGIHPALF
DAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHATRLRVRLTRTGADA
ITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPPHPDTTTDTDTDTDA
LRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNEELQAHQASDTAVSS
RIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDLAHAAVWGLIRSAQN
EHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLTRHSSDGALTAPVVV
DPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDLGAHVT
ITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTGDQLDQVLAPKIDAAW
QLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADYRHRLGLPATSLAWGY
WQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQPVSIPAPINTHTLARH
ARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLATLVAAATATVLGHHT
PESISPATAFKDLGIDSLTALELRNTLTHNTGLNLSSTLIFDHPTPHAVAEHLLEQIPGI
GALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIAGRDVVGNFPADRGWDV
EGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMDPQQRLLLEVCWEALET
AGIPAHTLAGTSTGVFVGAWAQSYGATNSDDAEGYAMTGGATSVMSGRIAYTLGLEGPAI
TVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFTDFSRQRGLAPDGRCKAF
AATADGTGWGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDGASNGLTAPHGPSQQRV
INQALANAGLTHDQVDAVEAHGTGTTLGDPIEAGALHATYGHHHTPDQPLWLGSIKSNIG
HTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVRLLTEPIQWPNTDHPRT
AAVSSFGISGTNAHLILQQPPTPDTTQTPNPTTGSDPAVGSDSAVGSDPAVGVLVWPLSA
RSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEHHSENNHDTT
DALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYRQFPVFAHAL
DEVAAALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALFALGTALHRLFTHAGIHPD
YLLGHSIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGGTMLALQASEAEVQPLLEG
LDHAVSIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRLQVSHAFHSPHMDPILEQF
RQIAAQLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRNTVRFHDTVAALLGAGEQV
FLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCHGISPSWNVL
YCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRGWVFTGRISP
RTQPWLNEHAVESAVLFPNTGFVELALHVADRAGYSSVNELIVHTPLLLAGHDTADLQIT
VTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNHLPLTPVPWP
PPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPEDTDIDGYGI
HPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHATRLRVRLTR
TGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPPHPDTTTDTD
TDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNEELQAHQASD
TAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDLAHAAVWGLI
RSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLTRHSSDGALT
APVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDL
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FIGURE 12

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GAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTGDQLDQVLAPK
IDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADYRHRLGLPATS
LAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQPVSIPAPINTH
TLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLATLVAAATATV
LGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLNLSSTLIFDHPTPHAVAEHLLE
QIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIAGRDVVGNFPAD
RGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMDPQQRLLLEVCW
EALETAGIPAHTLAGTSTGVFVGAGAQSYGATNSDDAEGYAMTGGATSVMSGRIAYTLGL
EGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAIFTEFSRQRGLAPDG
RCKAFAATADGTGWGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDGASNGLTAPHGP
SQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEAGALHATYGHHHTPDQPLWLGSI
KSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVRLLTEPIQWPNT
DHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNPTTGSDPAVGSDSAVGSDPAVGVLV
WPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEHHSEN
NHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYRQFPV
FAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVMVSLAALWRWAGIT
PDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMASVLSPEEPLTQLL
ARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVDYPSHSPYMEHIRH
QFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRNTVRFHDTVAALLG
AGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCHGISP
SWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRGWVFT
GRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLLAGHDTA
DLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNHLPLT
PVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPEDTDI
DGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHATRLR
VRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPPHPDT
TTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNEELQA
HQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDLAHAA
VWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLTRTAV
LTPPDSGPWRLDTTGKGDLANLALLPTAHTALASGQIRIDVRAAGLNFHDVVVALGLIPD
DGFGGEAAGVISEIGPDVYGFAVGDAVTGMTVSGAFAPSTVADHRMVMTIPARWSFPQAA
SIPVVFLTAYIALAEISGLSRGQRVLIHAGTGGVGMAAIQLAHHLGAEVFATASAAKWST
LEALGVPRDHIASSRTLDFSNAFLDATNGAGVDVVLNCLSGEFVEASLALLPRGGHFVEI
GKTDIRDTEVIAATHPGVIYRALDLLSVSPDHIQRTLAQLSPLFATDTLKPLPTTNYSIY
QAISALRDMSQARHTGKIVLTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLL
TSRRGPQAHGATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAVV
LADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGLGNYAA
ANTALDALADYRHRLGLPATSLAWGYWQTRTGLTAHLTDVDLARMTRLGLMPIATSHGLA
LFDAALATGQPVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNG
LSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLN
LSSTLIFDHPTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVAS
ADQLWDLVIAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFG
ISPREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAGAQSYGATNSDGAEG
YAMTGGAISVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVT
VMSTPAIFTEFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAI
VAGSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEAS
ALHATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSP
HIDWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTG
SDPAVGSDSAVGSDPAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLAT
TRSHHPHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFV
FPGQGSQYPGMGADLYRQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVV
QPVLFSVMVSLAALWRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTD
LAGAGAMASVLSPEEPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENI
DARAIPVDYPSHSPYMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTAD
YWYRNIRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKD
RPDAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTH
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FIGURE 12(continued)

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AMHPLLDTATELAENRGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAG
YSSVNELIVHTPLLLAGHDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEW
VLHASAVLTAQTTDHNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIW
RDHATPDVIYAEVELPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQ
VRLPYAFTGISLHATHATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATG
SAPATTAAGLLHLSWPPHPDTTTDTDTDTDALRYRVIAEPTQQLPRYLHDLHTSTDLHTS
TTEADVVVWPVPVPSNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVI
VTRHGVSTSAHDPVPDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTR
ENQLAIRRDTIHIPRLTRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGV
RHLLLTSRRGPQAHGATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVV
HTAAVLADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQ
GNYAAANTALDALADYRHRLGLPATSLAWGYWQTHGLTAHLTDVDLARMTRLGLMPIAT
SHGLALFDAALATGQPVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLA
ARLNGLSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTH
NTGLDLPPTLIFDHPTPTALTQHLHTRLTTGALVPAPVVIAAGRTEEPVAVVGMACRFPG
GVASADQLWDLVIAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDA
GFFGISPREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAWAQSYGATNSD
DAEGYAMTGGAISVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALA
GGVTVMSTPAVFTDFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHP
VLAIVAGSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDP
IEAGALHATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVD
QPSPHIDWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPN
TTTGSDPAVGSDPAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTR
SHHPHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFP
GQGSQYPGMGADLYRQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQP
VLFSVMVSLAALWRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLA
GAGAMASVLSPEEPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDA
RAIPVDYPSHSPYMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYW
YRNIRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRP
DAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAM
HPLLDTATELAENRGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYS
SVNELIVHTPLLLAGHDTADLQITVTDTDDMGRQSLNIHSHPHIGHDNTTTGDEQPEWVL
HASAVLTAQTTDHNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRD
HATPDVIYAEVELPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVR
LPYAFTGISLHATHATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSA
PATTAAGLLHLSWPPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTT
EADVVVWPVPVPSNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVT
RHGVSTSAHDPVPDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTREN
QLAIRRDTIHIPRLTRTAVLTPPDSGPWRLDTTGKGDLANLALLPTAHTALASGQIRIDV
RAAGLNFHDVVVALGLIPDDGFGGEAAGVISEIGPDVYGFAVGDAVTGMTVSGAFAPSTV
ADHRMVMTIPARWSFPQAASIPVVFLTAYIALAEISGLSRGQRVLIHAGTGGVGMAAIQL
AHHLGAEVFATASAAKWSTLEALGVPRDHIASSRTLDFSNAFLDATNGAGVDVVLNCLSG
EFVEASLALLPRGGHFVEIGKTDIRDTEVIAATHPGVIYRALDLLSVSPDHIQRTLAQLS
PLFATDTLKPLPTTNYSIYQAISALRDMSQARHTGKIVLTAPVVVDPEGTVLITGGTGTL
GALFAEHLVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDLGAHVTITACDISDPEALAAL
VNSVPTQHRLTAVVHTAAVLADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFI
MFSSMAGMIGSPGQGNYAAANTALDALADYRHRLGLPATSLAWGYWQTHTGLTAHLTDVD
LARMTRLGLMPIATSHGLALFDAALATGQPVSIPAPINTHTLARHARDNTLAPILSALIT
TPRRRAASAATDLAARLNGLSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGI
DSLTALELRNTLTHNTGLNLSSTLIFDHPTPHAVAEHLLEQIPGIGALVPAPVVIAAGRT
EEPVAVVGMACRFPGGVASADQLWDLVIAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTY
TRYGAFLDDAAGFDAGFFGISPREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGV
FVGAGAQSYGATNSDDAEGYAMTGGATSVMSGRIAYTLGLEGPAITVDTACSSSLVAIHL
ACQSLRNNESQLALAGGVTVMSTPAVFTEFSRQRGLAPDGRCKAFAATADGTGFGEGAAV
LVLERLSEARRNNHPVLAIVAGSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQV
DAVEAHGTGTTLGDPIEAGALHATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMI
QAITHATLPATLHVDQPSPHIDWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHL
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FIGURE 12(continued)

ILQQPPTPNPTQTPEDCSPAQSPCATITDAGTGLSFVPWVISAKSAEALSAQASRLLTRL
DDDPVVDAIDLGWSLIATRSMFEHRAVVVGADRHQLQRGLAELASGNLGADVVVGRARAA
GETVMVFPGQGSQRLGMGAQLYEQFPVFAAAFDDVVDALDQYLRLPLRQVMWGDDEGLLN
STEFAQPSLFAVEVALFALLRFWGVVPDYVIGHSVGELAAAQVAGVLSLQDAAKLVSARG
RLMQALPAGGAMVAVAASQHEVEPLLVEGVDIAALNAPGSVVISGDQAAVRLIANRLADR
GYRAHELAVSHAFHSSLMEPMLEEFARLASEIVVEQPQIPLISNVTGQLANADYGSAGYW
VDHIRRPVRFADSVASLEAMGASCFIEVGPASGLGAAIEQSLKSAEPTVSVSALSTDKPE
SVAVLRAAARLSTSGIPVDWQSVFDGRSTQTVNLPTYAFQRQRFWLDANRIGQGDPASQP
QAQNVESRFWEAVEREDVDGLADSIGVTASAMQTVLPALSSWRRAERTQSELDSWRYQVT
WLSSPATPSSITLSGIWLLIVPSELAKTDPVIGCAAALEAHGALVTIITIFEPDFNRSLM
GASLKDIGSHISGVISFLGIHGSEFSDSGAVKTLNLVQAMGDVHLDVPLWCLTQGAVSIS
ADDLIRCSSAALVWGLGRVVALEHPGSWGGLVDLPESPDDAAWERLCALLAQPTDEDQFA
IRPSGVFLRRLIHAPATTTSKSSTAWAPRGTVLITGGTGALGAHVARWLAHKYESVDLLL
TSRRGMAADGATELVDDLRTAGASVTVHACDVTDRTSVEAAIAGKSLDAVFHLAGRHQPT
LLTELEDESFSDELAPKVHGAQVLSDITSNLTLSAFVMFSSVAGIWGGKSQGAYAAANAF
LDSLAEKRRTLGLPATSVAWGLWAGGGMGDRPSASGLNLIGLKSMSADLAVQALSDAIDR
PQATLTVASVNWDRFYPTFALARPRPFLHEITEVMAYRESMRSSSASTATLLTSKLAGLT
ATEQRAVTRKLVLDQAASVLGYASTESLDTHESFKDLGFDSLTALELRDHLQTATGLNLS
STLIFDHPTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASAD
QLWDLVIAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGIS
PREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYA
MTGGSTSVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVM
STPAIFTEFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVA
GSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASAL
HATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHI
DWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSD
PAVGSDPAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHR
ATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQY
PGMGADLYRQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVM
VSLAALWRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMA
SVLSPEEPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVD
YPSHSPYMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRN
TVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFA
AALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDT
ATELAENRGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELI
VHTPLLLAGHDTADLQITVTDTDDMGRQSLNIHSHPHIGHDNTTTGDEQPEWVLHASAVL
TAQTTDHNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDV
IYAEVELPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFT
GISLHATHATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAA
GLLHLSWPPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTTEADVVVWPVPVP
SNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPV
PDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIP
RLTRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLLTSRRGPQAH
GATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTEL
TGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALA
DYRHRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATG
QPVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQT
LATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDH
PTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVI
AGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAM
DPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYAMTGGSTS
VMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFT
EFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQD
GASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHH
HTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTV
RLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSDPAVGSDP
AVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSI

FIGURE 12(continued)

EHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADL
YRQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVMVSLAALW
RWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMASVLSPEE
PLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVDYPSHSPY
MEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRNTVRFHDT
VAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLH
CHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAEN
RGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLL
AGHDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDH
NHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVEL
PEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHAT
HATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSW
PPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPS
NEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVP
DLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPR
LTRTAVLTPPDSGPWRLDTTGKGDLANLALLPTAHTALASGQIRIDVRAAGLNFHDVVVA
LGLIPDDGFGGEAAGVISEIGPDVYGFAVGDAVTGMTVSGAFAPSTVADHRMVMTIPARW
SFPQAASIPVVFLTAYIALAEISGLSRGQRVLIHAGTGGVGMAAIQLAHHLGAEVFATAS
AAKWSTLEALGVPRDHIASSRTLDFSNAFLDATNGAGVDVVLNCLSGEFVEASLALLPRG
GHFVEIGKTDIRDTEVIAATHPGVIYRALDLLSVSPDHIQRTLAQLSPLFATDTLKPLPT
TNYSIYQAISALRDMSQARHTGKIVLTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHG
VRHLLLTSRRGPQAHGATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAV
VHTAAVLADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPG
QGNYAAANTALDALADYRHRLGLPATSLAWGYWQTRTGVTAHLTDVDLARMTRLGLMPIA
TSHGLALFDAALATGQPVSIPAPINTHTLARHARDNTLTPILSALITTPRRRAASAATDL
AARLNGLSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLT
HNTGLDLPPTLIFDHPTPTALTQHLHTRLTTGALVPAPVVIAAGRTEEPVAVVGMACRFP
GGVASADQLWDLVIAGRDVVGNFPADRGWDVAGLFDPDPDAVGKTYTRYGAFLDDAAGFD
AGFFGISPREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAGAQSYGATNS
DDAEGYAMTGGAISVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLAL
AGGVTVMSTPAVFTDFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNH
PVLAIVAGSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGD
PIEAGALHATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHV
DQPSPHIDWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTP
NPTTGSDPAVGSDSAVGSDPAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVA
HSLATTRSHHPHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPG
KTVFVFPGQGSQYPGMGADLYRQFPVFAHALDEVAAALNPHLDVALLEVMFSQQDTAMAQ
LLDQTFYAQPALFALGTALHRLFTHAGIHPDYLLGHSIGELTAAYAAGVLSLQDAATLVT
SRGRLMQSCTPGGTMLALQASEAEVQPLLEGLDHAVSIAAINGATSIVLSGDHDSLEQIG
EHFITQDRRTTRLQVSHAFHSPHMDPILEQFRQIAAQLTFSAPTLPILSNLTGQIARHDQ
LASPDYWTQQLRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVP
ALRKDRPDAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFS
GANTHAMHPLLDTATELAENRGWVFTGRISPRTQPWLNEHAVESAVLFPNTGFVELALHV
ADRAGYSSVNELIVHTPLLLAGHDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGD
EQPEWVLHASAVLTAQTTDHNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQG
VQRIWRDHATPDVIYAEVELPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTA
DTGDQVRLPYAFTGISLHATHATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPL
TTATGSAPATTAAGLLHLSWPPHPDTTTDTDTDTDTDALRYQVIAEPTQQLPRYLHDLHT
STDLHTSTTEADVVVWPVPVPSNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDT
TGTRLVIVTRHGVSTSAHDPVPDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTT
ALTLPTRENQLAIRRDTIHIPRLTRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEH
LVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDLGAHV́TITACDISDPEALAALVNSVPTQ
HRLTAVVHTAAVLADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAG
MIGSPGQGNYAAANTALDALADYRHRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRL
GLMPÍATSHGLALFDAALATGQPVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAA
SAATDLAARLNGLSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALE
LRNTLTHNTGLDLPPTLIFDHPTPTALTQHLHTRLTQIESPNSEDSMLNLKNLDRIESYI
FRNSGEDRAHVIANRLRSILSKWDGTRSPELPAELHLESATDDELFSLANMFRTPTSEIS
PTLEGGRGVN*

FIGURE 12(continued)

MlsA2 protein
VVSTEENLRVYLKQVITDLHQMQARLRKIEKQRSERVAVVGMACRFPGGVASADQLWDLV
IAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARA
MDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAWAQSYGATNSDGAEGYAMTGGST
SVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVF
TEFSRQRGLAPDGRCKAFAATADGTGWGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQ
DGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGH
HHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGT
VRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSDPAVGSD
SAVGSDPAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHR
ATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQY
PGMGADLYRQFPVFAHALDEVAAALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALF
ALGTALHRLFTHAGIHPDYLLGHSIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGG
TMLALQASEAEVQPLLEGLDHAVSIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRL
QVSHAFHSPHMDPILEQFRQIAAQLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRN
TVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFA
AALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDT
ATELAENRGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELI
VHTPLLLAGHDTADLQITVTDTDDMGRQSLNIHSHPHIGHDNTTTGDEQPEWVLHASAVL
TAQTTDHNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDV
IYAEVELPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFT
GISLHATHATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAA
GLLHLSWPPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVV
WPVPVPSNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVST
SAHDPVPDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRR
DTIHIPRLTRTAVLTPPDSGPWRLDTTGKGDLANLALLPTAHTALASGQIRIDVRAAGLN
FHDVVVALGLIPDDGFGGEAAGVISEIGPDVYGFAVGDAVTGMTVSGAFAPSTVADHRMV
MTIPARWSFPQAASIPVVFLTAYIALAEISGLSRGQRVLIHAGTGGVGMAAIQLAHHLGA
EVFATASAAKWSTLEALGVPRDHIASSRTLDFSNAFLDATNGAGVDVVLNCLSGEFVEAS
LALLPRGGHFVEIGKTDIRDTEVIAATHPGVIYRALDLLSVSPDHIQRTLAQLSPLFATD
TLKPLPTTNYSIYQAISALRDMSQARHTGKIVLTAPVVVDPEGTVLITGGTGTLGALFAE
HLVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPT
QHRLTAVVHTAAVLADTPVTELTGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMA
GMIGSPGQGNYAAANTALDALADYRHRLGLPATSLAWGYWQTRTGVTAHLTDVDLARMTR
LGLMPIATSHGLALFDAALATGQPVSIPAPINTHTLARHARDNTLTPILSALITTPRRRA
ASAATDLAARLNGLSPQQQQQTLATLVAAATATVLGHHTPESISPATAFKDLGIDSLTAL
ELRNTLTHNTGLDLPPTLIFDHPTPHALTQHLHTRLTQSHTPVGPIASLLSHAIDEGKFR
AGADLLMAASNLNQSFSNMAELNQLPAVTDIADASPDGLLTLICISTSENEYARLAAANI
HSLTFAEIAAPGFYDAQLPNSIETSAEALATAITGAYANTSIVLVAHSIVCELAQATMTR
LQDADIDLVGLVLLDPLEGTNSTEDYVETVLTRIEHINAPRVGVDGYLAALGRYLQFHED
RRIPIPETRHMTLHSDTKIDRAQTPMNLLQDEAALTALKIGNWMNDTGSIAVTLRDGPVF
LGRARSVNMR*

FIGURE 13

MslB protein
VIFGDAHQNCRGGRVLGDAVAVVGMSCRVPGASDPDALWALLRDGISVVDEIPSARWNLD
GLVAHRLTDEQRSALRHGAFLDDVEGFDAAFFGINPSEAGSMDPQQRLMLELTWAALEDA
RIVPEHLSGSSSGVFTGAMSDDYTTAVTYRAAMTAHTFAGTHRSLIANRVSYTLGLRGPS
LVIDTGQSSSLVAVHVAMESLRREETSLAIAGGIHLNLSLAAALSAAHFGALSPDGRCYT
FDARANGYVRGEGGGVVVLKRLNDALADGNHIYCVIRGSSVNNDGATQDLTAPGVDGQRQ
ALLQAYERAEIDPSEVQYVELHGTGTRLGDPTEAHSLHSVFGTSTVPRSPLLVGSIKTNI
GHLEGAAGILGLIKTALAVHHRQLPPSLNYTVPNPKIPLEQLGLRVQTTLSEWPDLDKPL
TAGVSSFSMGGTNAHLILQQPPTPDTTQTPNPTTGSDPAVGSDPAVGVLVWPLSARSAPG
LSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEHHSENNHDTTDALAA
LHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYRQFPVFAHALDEVAA
ALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALFALGTALHRLFTHAGIHPDYLLGH
SIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGGTMLALQASEAEVQPLLEGLDHAV
SIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRLQVSHAFHSPHMDPILEQFRQIAA
QLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRNTVRFHDTVAALLGAGEQVFLELS
PHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCGISPSWNVLYCQAR
PLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRGWVFTGRISPRTQPW
LNEHAVESAVLFPNTGFVELALHVADRAGYSSVNELIVHTPLLLAGHDTADLQITVTDTD
DMGRQSLNIHSHPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNHLPLTPVPWPPPGTA
AIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPEDTDIDGYGIHPALF
DAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHATRLRVRLTRTGADA
ITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPPHPDTTTDTDTDTDA
LRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNEELQAHQASDTAVSS
RIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDLAHAAVWGLIRSAQN
EHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLTRHSSDGALTAPVVV
DPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGATDLQQRLTDLGAHVT
ITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTGDQLDQVLAPKIDAAW
QLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADYRHRLGLPATSLAWGY
WQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQPVSIPAPINTHTLARH
ARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLATLVAAATATVLGHHT
PESISPATAFKDLGIDSLTALELRNTLTHNTGLNLSSTLIFDHPTPHAVAEHLLEQIPGI
GALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIAGRDVVGNFPADRGWDV
EGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMDPQQRLLLEVCWEALET
AGIPAHTLAGTSTGVFVGAWAQSYGATNSDDAEGYAMTGGATSVMSGRIAYTLGLEGPAI
TVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFTEFSRQRGLAPDGRCKAF
AATADGTGWGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDGASNGLTAPHGPSQQRV
INQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHHHTPDQPLWLGSIKSNIG
HTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVRLLTEPIQWPNTDHPRT
AAVSSFGISGTNAHLILQQPPTPNPTQTPEDCSPAQSPCATITDAGTGLSFVPWVISAKS
AEALSAQASRLLTRLDDDPVVDAIDLGWSLIATRSMFEHRAVVVGADRHQLQRGLAELAS
GNLGADVVVGRARAAGETVMVFPGQGSQRLGMGAQLYEQFPVFAAAFDDVVDALDQYLRL
PLRQVMWGDDEGLLNSTEFAQPSLFAVEVALFALLRFWGVVPDYVIGHSVGELAAAQVAG
VLSLQDAAKLVSARGRLMQALPAGGMAVAASQHEVEPLLVEGVDIAALNAPGSVVISG
DQAAVRLIANRLADRGYRAHELAVSHAFHSSLMEPMLEEFARLASEIVVEQPQIPLISNV
TGQLANADYGSAGYWVDHIRRPVRFADSVASLEAMGASCFIEVGPASGLGAAIEQSLKSA
EPTVSVSALSTDKPESVAVLRAAARLSTSGIPVDWQSVFDGRSTQTVNLPTYAFQRQRFW
LDANRIGQGDPASQPQAQNVESRFWEAVEREDVDGLADSIGVTASAMQTVLPALSSWRRA
ERTQSELDSWRYQVTWLSSPATPSSITLSGIWLLIVPSELAKTDPVIGCAAALEAHGALV
TIITIFEPDFNRSLMGASLKDIGSHISGVISFLGIHGSEFSDSGAVKTLNLVQAMGDVHL
DVPLWCLTQGAVSISADDLIRCSSAALVWGLGRVVALEHPGSWGGLVDLPESPDDAAWER
LCALLAQPTDEDQFAIRPSGVFLRRLIHAPATTTSKSSTAWAPRGTVLITGGTGALGAHV
ARWLAHKYESVDLLLTSRRGMAADGATELVDDLRTAGASVTVHACDVTDRTSVEAAIAGK
SLDAVFHLAGRHQPTLLTELEDESFSDELAPKVHGAQVLSDITSNLTLSAFVMFSSVAGI
WGGKSQGAYAAANAFLDSLAEKRRTLGLPATSVAWGLWAGGGMGDRPSASGLNLIGLKSM
SADLAVQALSDAIDRPQATLTVASVNWDRFYPTFALARPRPFLHEITEVMAYRESMRSSS
ASTATLLTSKLAGLTATEQRAVTRKLVLDQAASVLGYASTESLDTHESFKDLGFDSLTAL

FIGURE 14

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ELRDHLQTATGLNLSSTLIFDHPTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAV
VGMACRFPGGVASADQLWDLVIAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAF
LDDAAGFDAGFFGISPREARAMDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAWA
QSYGATNSDDAEGYAMTGGATSVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLR
NNESQLALAGGVTVMSTPAVFTEFSRQRGLAPDGRCKAFAATADGTGWGEGAAVLVLERL
SEARRNNHPVLAIVAGSAINQDGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAH
GTGTTLGDPIEASALHATYGHHHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHA
TLPATLHVDQPSPHIDWSSGTVRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPP
TPNPTQTPEDCSPAQSPCATITDAGTGLSFVPWVISAKSAEALSAQASRLLTRLDDDPVV
DAIDLGWSLIATRSMFEHRAVVVGADRHQLQRGLAELASGNLGADVVVGRARAAGETVMV
FPGQGSQRLGMGAQLYEQFPVFAAAFDDVVDALDQYLRLPLRQVMWGDDEGLLNSTEFAQ
PSLFAVEVALFALLRFWGVVPDYVIGHSVGELAAAQVAGVLSLQDAAKLVSARGRLMQAL
PAGGAMVAVAASQHEVEPLLVEGVDIAALNAPGSVVISGDQAAVRLIANRLADRGYRAHE
LAVSHAFHSSLMEPMLEEFARLASEIVVEQPQIPLISNVTGQLANADYGSAGYWVDHIRR
PVRFADSVASLEAMGASCFIEVGPASGLGAAIEQSLKSAEPTVSVSALSTDKPESVAVLR
AAARLSTSGIPVDWQSVFDGRSTQTVNLPTYAFQRQRFWLDANRIGQGDPASQPQAQNVE
SRFWEAVEREDVDGLADSIGVTASAMQTVLPALSSWRRAERTQSELDSWRYQVTWLSSPA
TPSSITLSGIWLLIVPSELAKTDPVIGCAAALEAHGALVTIITIFEPDFNRSLMGASLKD
IGSHISGVISFLGIHGSEFSDSGAVKTLNLVQAMGDVHLDVPLWCLTQGAVSISADDLIR
CSSAALVWGLGRVVALEHPGSWGGLVDLPESPDDAAWERLCALLAQPTDEDQFAIRPSGV
FLRRLIHAPATTTSKSSTAWAPRGTVLITGGTGALGAHVARWLAHKYESVDLLLTSRRGM
AADGATELVDDLRTAGASVTVHACDVTDRTSVEAAIAGKSLDAVFHLAGRHQPTLLTELE
DESFSDELAPKVHGAQVLSDITSNLTLSAFVMFSSVAGIWGGKSQGAYAAANAFLDSLAE
KRRTLGLPATSVAWGLWAGGGMGDRPSASGLNLIGLKSMSADLAVQALSDAIDRPQATLT
VASVNWDRFYPTFALARPRPFLHEITEVMAYRESMRSSSASTATLLTSKLAGLTATEQRA
VTRKLVLDQAASVLGYASTESLDTHESFKDLGFDSLTALELRDHLQTATGLNLSSTLIFD
HPTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLV
IAGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARA
MDPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFVGAWAQSYGATNSDDAEGYAMTGGAI
SVMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALTGGVTVMSTPAIF
TEFSRQRGLAPDGRCKAFAATADGTGWGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQ
DGASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGH
HHTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGT
VRLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSDPAVGSD
PAVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTS
IEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGAD
LYRQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVMVSLAAL
WRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMASVLSPE
EPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVDYPSHSP
YMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRNTVRFHD
TVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQL
HCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAE
NRGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLL
LAGHDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTD
HNHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVE
LPEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHA
THATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLS
WPPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVP
SNEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPV
PDLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIP
RLTRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAH
GATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTEL
TGDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALA
DYRHRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATG
QPVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQT
LATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDH
PTPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVI
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FIGURE 14(continued)

AGRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAM
DPQQRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYAMTGGSTS
VMSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFT
EFSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQD
GASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHH
HTPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTV
RLLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNPTTGSDPAVGSDP
AVGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSI
EHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADL
YRQFPVFAHALDEVAAALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALFALGTALH
RLFTHAGIHPDYLLGHSIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGGTMLALQA
SEAEVQPLLEGLDHAVSIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRLQVSHAFH
SPHMDPILEQFRQIAAQLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRNTVRFHDT
VAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLH
CHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAEN
RGWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLL
AGHDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDH
NHLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVEL
PEDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHAT
HATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSW
PPHPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPS
NEELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVP
DLAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPR
LTRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHG
ATDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELT
GDQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALAD
YRHRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQ
PVSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTL
ATLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDHP
TPHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIA
GRDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMD
PQQRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYAMTGGATSV
MSGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFTE
FSRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDG
ASNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHHH
TPDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVR
LLTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTGSDPAVGSDPA
VGVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIE
HHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLY
RQFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVMVSLAALWR
WAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMASVLSPEEP
LTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVDYPSHSPYM
EHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRNTVRFHDTV
AALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHC
HGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENR
GWVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLLA
GHDTADLQITVTDTDDMGRQSLNIHSHPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHN
HLPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELP
EDTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATH
ATRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWP
PHPDTTTDTDTDTDALRYRVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSN
EELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPD
LAHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRL
TRHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGA
TDLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTG
DQLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADY
RHRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQP

FIGURE 14(continued)

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VSIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLA
TLVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDHPT
PHAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIAG
RDVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMDP
QQRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYAMTGGATSVM
SGRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFTEF
·SRQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDGA
SNGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHHHT
PDQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVRL
LTEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSDPAVGSDPAV
GVLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEH
HSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYR
QFPVFAHALDACDAALQPFTGWSVLAVLHDEPEAPSLERVDVVQPVLFSVMVSLAALWRW
AGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVALRSRVLTDLAGAGAMASVLSPEEPL
TQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDARAIPVDYPSHSPYME
HIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYWYRNIRNTVRFHDTVA
ALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCH
GISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRG
WVFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLLAG
HDTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNH
LPLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPE
DTDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHA
TRLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPP
HPDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNE
ELQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDL
AHAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLT
RHSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGAT
DLQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTGD
QLDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADYR
HRLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQPV
SIPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLAT
LVAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDHPTP
HAVAEHLLEQIPGIGALVPAPVVIAAGRTEEPVAVVGMACRFPGGVASADQLWDLVIAGR
DVVGNFPADRGWDVEGLFDPDPDAVGKTYTRYGAFLDDAAGFDAGFFGISPREARAMDPQ
QRLLLEVCWEALETAGIPAHTLAGTSTGVFAGAWAQSYGATNSDDAEGYAMTGGATSVMS
GRIAYTLGLEGPAITVDTACSSSLVAIHLACQSLRNNESQLALAGGVTVMSTPAVFTEFS
RQRGLAPDGRCKAFAATADGTGFGEGAAVLVLERLSEARRNNHPVLAIVAGSAINQDGAS
NGLTAPHGPSQQRVINQALANAGLTHDQVDAVEAHGTGTTLGDPIEASALHATYGHHHTP
DQPLWLGSIKSNIGHTQAAAGAAGVVKMIQAITHATLPATLHVDQPSPHIDWSSGTVRLL
TEPIQWPNTDHPRTAAVSSFGISGTNAHLILQQPPTPDTTQTPNTTTGSDPAVGSDPAVG
VLVWPLSARSAPGLSAQAARLYQHLSAHPDLDPIDVAHSLATTRSHHPHRATITTSIEHH
SENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQGSQYPGMGADLYRQ
FPVFAHALDEVAAALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQPALFALGTALHRLF
THAGIHPDYLLGHSIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCTPGGTMLALQASEA
EVQPLLEGLDHAVSIAAINGATSIVLSGDHDSLEQIGEHFITQDRRTTRLQVSHAFHSPH
MDPILEQFRQIAAQLTFSAPTLPILSNLTGQIARHDQLASPDYWTQQLRNTVRFHDTVAA
LLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRPDAVAFAAALGQLHCHG
ISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAMHPLLDTATELAENRGW
VFTGRISPRTQPWLNEHAVESAVLFPGTGFVELALHVADRAGYSSVNELIVHTPLLLAGH
DTADLQITVTDTDDMGRQSLNIHSRPHIGHDNTTTGDEQPEWVLHASAVLTAQTTDHNHL
PLTPVPWPPPGTAAIEVDDFYDDLAAQGYNYGPTFQGVQRIWRDHATPDVIYAEVELPED
TDIDGYGIHPALFDAALHPLLALTQPPTNDTDDTNTADTGDQVRLPYAFTGISLHATHAT
RLRVRLTRTGADAITVHTSDTTGAPVAIIDSLITRPLTTATGSAPATTAAGLLHLSWPPH
PDTTTDTDTDTDALRYQVIAEPTQQLPRYLHDLHTSTDLHTSTTEADVVVWPVPVPSNEE
LQAHQASDTAVSSRIHTLTRQTLTVVQDWLTHPDTTGTRLVIVTRHGVSTSAHDPVPDLA
HAAVWGLIRSAQNEHPGRFTLLDTDDNTNSDTLTTALTLPTRENQLAIRRDTIHIPRLTR
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FIGURE 14(continued)

HSSDGALTAPVVVDPEGTVLITGGTGTLGALFAEHLVSAHGVRHLLLTSRRGPQAHGATD
LQQRLTDLGAHVTITACDISDPEALAALVNSVPTQHRLTAVVHTAAVLADTPVTELTGDQ
LDQVLAPKIDAAWQLHQLTYEHNLSAFIMFSSMAGMIGSPGQGNYAAANTALDALADYRH
RLGLPATSLAWGYWQTHTGLTAHLTDVDLARMTRLGLMPIATSHGLALFDAALATGQPVS
IPAPINTHTLARHARDNTLAPILSALITTPRRRAASAATDLAARLNGLSPQQQQQTLATL
VAAATATVLGHHTPESISPATAFKDLGIDSLTALELRNTLTHNTGLDLPPTLIFDHPTPH
ALTQHLHTRLTQSHTPVGPIASLLSHAIDEGKFRAGADLLMAASNLNQSFSNMAELNQLP
AVTDIADASPDGLLTLICISTSENEYARLAAANIHSLTFAEIAAPGFYDAQLPNSIETSA
EALATAITGAYANTSIVLVAHSIVCELAQATMTRLQDADIDLVGLVLLDPLEGTNSTEDY
VETVLTRIEHINAPRVGVDGYLAALGRYLQFHEDRRIPIPETRHMTLHSDTKIDRAQTPM
NLLQDEAALTALKIGNWMNDVGVALSVNLE*

FIGURE 14(continued)

Mup045 protein
VIWNDIYISGTGRFIPSMRPINDIQVDGVPNDHTIVQSDYISFTEADEPATVMATRAATE
ALTTSELVSADVGVLIYAAIIGDAHHFAPVCHVQRVLRAPDALAFELSAASNGGTQGIAV
AANLMTADASVKAALVCTAYRHPIDIISRWSSGMVFGDGAAAAVLSRDGGMVRLISGYHG
SLPELEVLARNRSNERLGFVLPDVGLGKYLTAIARMYQAVIAQVLEEAQTSIAEIDYFGL
IGIGIPSLTATILEPNGIPVNKTSWGLLRQMGHVGACDPLLSLNHLFEQNVLKRGDKVLL
LGGGVGYRLTCIVAEIAMNPGVPGHSTS*

FIGURE 15

Mup053 protein
VRQRLNWIAAHGLLRGTARLAARLGDVQSRLVADPMVMANPAPFCDELRAIGPVVSSYGT
HLVVSHAIAHELLRSEDFEVVSLGSNLPAPMRWLERRTRDDTPHLLLPPSLLAVEPPNHT
RYRKAVSSVFTPKAVAGLRDHVEETASALLDQLTDQASAVDIIARYCSQLPVAVICDILG
VPSRDRNRVLKFGQLAGPCLDFGLTWRQHQQVRQGLQGLHFWITEHLEELRSNPGDDLMS
QMIHASENGSSETHLHATEVRMIGLVLGASFATTMDLLGNGIQVLLDAPELRDALSQRPQ
LWPNAVEEILRLEPPVQLAGRMARKDTEVAGTAIKRGQLVAIYLGAVNRDPSVFADPHRF
DITRANANRHLAFSGGRHFCLGAALARVEGEVGLRMLFERFPDVRAAGPGNRRDTRTLRG
WSQLPVQLGAARSMAIR*

FIGURE 16

Mup038 protein
MIVWPEVVSTVVDVDGVAMSALVAEPDQEPKAVILALHGGATNARYFDCPGHRALSLLHT
GAAAGFTVVALDRPGYGSSAGDPDAMNRPHQRAALAYGALDRILAQRPRGAGVFIMGHSN
GCELAMWMATETRGAELLGIELAGTGWHYQPEAREILTTATGEHRWVGLYDLLWHPQRLY
PPEVLNAAIISSSAPAYEEQMMADWTRRTFLELVPAVRVPVHFSIAQHEKVWQRDSSALD
EIAVLFSGAPRFILHEQPEAGHNISLGHTAGDYHTTVLSFVQQCLAERLANAQQDVDLAA
E*

FIGURE 17

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atgccagcac cgagcgtgtt tgtcggcctg gaactcgaca ccaacagtta caccggtgtg 60
ccgtgctgga gcgctggccc cgcccactgg gcccacaaca ccgtcgcggt ggcctacgac 120
ctgcgctatc aacagatccg gtcgctgatg tgtgacggcg gcatcgcccg aaaaaccctg 180
atcgtcatcg ccgcggccat ggcacgtcac gccgacggga gcaactgccg caactgccgg 240
cccaccaaca accagctcga agccgcgaca ggcttccacc agcgcaccat ccagcgggcc 300
cacgaatgcc tacgcctact cggggtggct accgaggtgc tgcgcggccg ccaacgcacc 360
tacatcgagc gcatggcctc ctggagaatg ggcgatcgcc accgcggctg ggcgtccgtg 420
tgggcactac acgacaacgg cgaggtcgca cgggttgtcc acagcttgtc accccacctg 480
gaacggtcct cagtaaccac acacacctca cctaaaacaa gcctgtttac tacccacccg 540
ggcgccacac gcgcccggga aagcggcgct acgcgccgca acagcccaga cgcccggggc 600
cggcgacttg cggctcaatg gcgagcagac ccccatgctc ccccatggac tcgtcggtac 660
agccctacga gctggtcagc aatgctcgct gcccccgcag ccgcaggttg gactgcacgc 720
gacctgaccg cattggtaca agactggctc ggtaccggtc accgaatacc gtccactcca 780
gcgcgcccga tcgccctgct cggcacactg cttgcttggc ataccagcca caacagcatc 840
caacaccgcc cagctgcact cgaggaagca cgcgaaggcg cagacctggc cgcggttcgc 900
aaacggattc aaaaacaaac cgctgaacac cacgccaacc tcgcggcgcg agaagccggc 960
cgcgccgcac tgggcggtcc cggccaccag gccgccagaa ttgctgccgc tgctgctgct 1020
cgcaacgccg cccgacggcg caccaaaatg gtcgcggcag aagtagcgag cgtcgatgcg 1080
gcgatccggc gggcccgcgg ccgctaaccc agcggcctac gctgacagca gttcggtgcg 1140
atcgagcagc gatgctgccg tgcgcctaat caactcgcac cggatcgatc cttgctgctc 1200
agctaccggc accagttccg tcagcaagtc gccgcactgg cgaataagag ccggcaactt 1260
tgttcctgcc gccgcctcga gctctcgaag cttggtggta tcgaaacgta cctgcagccg 1320
gcccgccata ttgcggttct ctgagccctg acgccgtttg cgccgcagag cctcttgctc 1380
tgcagacccg gccgtggcgc actggcgctt gaactcgggc gcgtttgtca tgggaactcc 1440
ttcaatagtg cgggatcgtc gagccggctc gggcggctac gacatgtaag ccaacttgca 1500
gcaaccctgc tgcgccacac gcgctcatgt aagccagaat ttttgctcgc cccaactccc 1560
atcgcccccc aagaaccgta gagagcaggc tttgaactgc ggatatcagc cgccgttgtg 1620
gcaatgcgcg actggtaaac atgtaagtaa gtttgccata gaacgaggtt ttgcataccg 1680
gatctcgcgg cgcgtgtcac gaaagtggcg caggacttta cttacatacc ccctcctgcg 1740
caagaatggg accgtgtcat cgcccagcga accgtcggcg tatacgctcg ccgatgccgg 1800
caagcagttg ggcgtcaccg cccagcgcgt gagccagcag ctgagcgagc gcgagctgac 1860
aggcccgcaa tatccacaac aacgggttcc caagaacgcg gtgcgcgtct ggaaatggtc 1920
gctcgaccag gagttggcac gaagaaggtc cactcccccg ccacgtcact cacgcagaca 1980
acaacccgac cccggtgccg atcaggggta cctcgcgcaa tggtggagcc gccgggaagc 2040
gcgcgtcaac gccgctgcgc acgaactcaa agttgccgca gacctcgctc gacagcatgc 2100
cagcgacgag cgtcgaaaag cccgacagct gatgtcgaag ctcgcgcgac tgaccatcca 2160
gcaggctgaa ctcatcgaac ggctaaaaga cgacctcgca gtggaatcgg aacgtaccga 2220
acagatcatc gatgcttact ccgatgcctt aacccagctc ctgcccccg acttcggccc 2280
accaccgtga cccgcgatca gcaggtcaat caggcgtcct tcctgccggg caggaacgca 2340
ttgagcacag gggcgatcca cgtcgatcgg gtatcgaatc ccaactttga gccgatggtg 2400
tcgatgacct cctcttgctc ggcggtcaga ctaaacgcga tctgcgcgct gccaccaccg 2460
agatagcgca cggccgaagg gtcggccggg aaaaggtcgt gggtaggtgc agtcgagtac 2520
cggctcttct cgatgatctc ggccagttca ccagcctggt acttgatgct gatcgcctcc 2580
aaaaccacat gcaaattggt tgacttcacg ttgtgccgat acttctcgaa gcggctcttg 2640
acgccaggac tgacatatac cgccgtggtc ggcttggacc gagtgcgtgg ccggccaggc 2700
ttgcgtgcgg gcactttggc ggccgagaca tcagaggtct tagagggcgt tgcggcaacc 2760
ggtctgtcct caacaggtac ctcgacagca gcctgttcgg gagcactggc gggccgaggc 2820
tgggctgcgt tgacgaggtc agctagacca gcgccgcgac tcttcggctt tgtgaggtct 2880
gcgagatccg cttcgggcag ctcctgcggc gttaacttgc tcacgccac actccttcgt 2940
tgatcaggtc ctggcggatc tttgaacccc gcgtgagaat ttctccggtc agcttggcga 3000
agtcctcggc cacgctcaca gatgtcgtgc tgacgaccgt agtcgcatct gctctccct 3060
gccgtatcgc tgaccgagac ggattattga cgatttcctg ctcaagttcg tgggccaacc 3120
gaccaaactt aggcacgtcc ctgccaacag cttctgagtg gcggatgaac gaatcgagca 3180
tcacgtcatc gttctgcccc aaatctgcag ccacattctt cttcatctct tcccggatcc 3240
tcgtcgatga agttcctgac gcaaacacga aacagccgag caacaccaca gatgggttgt 3300
gctcgcgcat cgcccttaga tcgcctgcca actcgcgcag tccggtcctt gataggtcat 3360
cggtcttcat cggaactaca acaaaccgcg acgcacacga ggccgcctga agaagcaact 3420
ggttctccgg aggggaatca atgaagataa ccccgtaatg atcactgatc tgtgccaacg 3480
ccagcgccag cgacatcagc acctgtttgg cagtctgcgg gttgcccatc tctgcagcca 3540
tcaccggcgc gatccgacgg acgaaaggcc caccgggaac aacatccaat cccggacgga 3600
catcgggaat cggggtcaac gcagcgccgg cagtaatcgc gctgtagaga ttcctaccct 3660
tgtcgtcggc ttctgtattc gcgaagccaa gcatgttcgc cacgttgccc tggccgttga 3720
gatcgaccaa taaggcgcgc gctccatcgg aggcaacgag cgcggcgctg tgggtagaac 3780
acgtcgactt ccctaccca cccttgccgt tggcgaacag ataaacattg cccagcttgc 3840
tccaatttgac cgcgggttct accagcccag cgtcgtccca aacggctacg cttctactca 3900
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FIGURE 18

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tgcgggcgcc ttactgtgtt ggaatcggga gaatgccgcg cctggcatgc cgcgcaccga 3960
accgcactgc accccacgcg ctgtcacggt ctgcagagtc tagggcgatc agctcggtgt 4020
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ccgtttttcga tcccgcgcca tcccgatact tcggcggtca ccttccacca cgacgttcct 7800
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FIGURE 18(continued)

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```

FIGURE 18(continued)

```
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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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gttgccggag cagaccctgt ggcggtggtg aggggcgggg tgatcaatga gtcgatgatc 43380
gccaccgggg ctccggtggt gtcactggtg tgcacggtga tggcatcggc gccggtacgg 43440
gtcagccgta cccgcaatcg ggtggcgtgg gtggcgtgca aactgatgcc ggtaaaggcg 43500
```

FIGURE 18(continued)

```
tagggcagcc gcacctggtc accggtgtct gcggtgttgg tgtcatcggt gtcgttggtg 43560
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ttgatcgggg cgggtatcga aacgggctgt ccggtggcga gggcggcatc gaacagggcc 47460
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FIGURE 18(continued)

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gcgggcaagc ccaggcggtg gcggtagtcg gcgagagcat ctaacgcggt gttggctgcc 47640
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gcagacaggt tgtgttcgta ggtgagttgg tgcagctgcc atgccgcgtc gattttgggg 47760
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```

FIGURE 18(continued)

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ccggagacca cagcgctagc ggggccgtta actgcggcga cagtgatctt gccgtcccac 55680
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FIGURE 18(continued)

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FIGURE 18(continued)

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gacagtgccg acactgacac ggtcggctcg gcagatttca aggattgctc gatagctgcg 59940
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```

FIGURE 18(continued)

```
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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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caggttgtgt tcgtaggtga gttggtgcag ctgccatgcc gcgtcgattt tgggggccag 120840
cacctggtcg agttgatcgc cggtcaactc ggtgaccggg gtgtcggcca ataccacggc 120900
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```

FIGURE 18(continued)

```
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atgccggaca ccatgggcag aaaccagatg ctcggcgaac aaggcaccca gcgtcccggt 121140
cccccccggtg atcaacaccg tgccctcagg atctctaccacc accggcgcag tgagcacgat 121200
cttgcctgtg tgacgggctt gactcatgtc acgtaaggcc gagatggctt ggtagatgct 121260
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FIGURE 18(continued)

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FIGURE 18(continued)

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FIGURE 18(continued)

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caggtagcgg  ggcagttgtt  gagtgggttc  ggcgatcacc  tgataccgca  gggcatcggt  133500
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FIGURE 18(continued)

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gcgaaccggt cagccatttc ggttcgcgaa tcgatggcgc tgagcagatg tcgtttggcg 137460
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FIGURE 18(continued)

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```

FIGURE 18(continued)

```
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FIGURE 18(continued)

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FIGURE 18(continued)

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```

FIGURE 18(continued)

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```

```
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FIGURE 18(continued)

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FIGURE 18(continued)

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gacgtcgcgt tcgtcgtggc cctcgttgtc tgggccggat tcggtgggat tgggttcttg 170400
ctcgctctga gttgtcggca ccggcgtcgt cgtatcccct tgtccgccac caggttcaac 170460
aatgggcgaa actggcggcg gcggcccaga aggtgccgcc ggaatctcac tcgtgtggta 170520
gccggcggcc accacgtggg tgcggttggt caactggacg agattggcgt gtgcctgaga 170580
caccgccgcc gcagaccccg gactcgggaa agagctgttg agctggatgg cgttttgcag 170640
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gatcgcttgg gctcccgcct ccaagacggc agccccatca agggcacgcg aggccaccac 171180
cgcgccatgc ccactaaggc gcgcagcagc gctcatcgac acggcatcgg tggccagtgg 171240
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cagcgtggct tcacgggcat tgacagcatc aacggtggcc cgacgggcct cagcgaacag 171840
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ggtgtcagcg gtgccggctg cgttgtgact gaggtcagcg ttgacgtcgt ggtcgaaggc 172080
cgtgtccacc cgaggaaatt cgggcctgtt tcgagctggt cgatcggcgt gacttgccca 172140
ttgagccaaa cgtggtcttt gtctagtgcc atgacccgat ggtcggtgta ttgacccaca 172200
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tctttggggt tgctttgggg ggtctccgtg agaggttcaa cgtgctcgtc ggagtccagc 172560
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tcagaagcca gtccgtcgag gagaggatca gctgccggta ggccgtcttc gccgccgtcg 172800
cccgttgacg ggggcgcatc gccggatgag gttgtggcgt cttgaggctg ccgtcgctg 172860
gccggggtct cgtcggagcc cgcgtcatg tgcagaccgc ggtagcgcgc tgacaggcca 172920
tcaagtaccc gcgcctgcga atcagagtcc aacccagcat ttttcaacac gttgagaatg 172980
tcgccggtct tgccctgcaa gaactcggcg agctgctgtt ggccggcggg agtgtccaat 173040
gaggatccca gcttgtcgat ctcgtcgata atttcttgct ggaggcgctg caaacgctgg 173100
tggccctcgg cgctcgagct cgatgccttc aacaccgcat cggcgagttg gtcgtcggcg 173160
tcattaatag ccgagtggtt acgagctaaa gcttcgtcga gacgcttggc ggcctcggcc 173220
gcagcgccac gaagctcggg actgtctggg ttgggaggag tcgccgctgg ggtggtagga 173280
cgcggaggcg gcgcggccgg aggcggcaca gacagcggtt gatcacgtcc cagtgcacgg 173340
ttgatctggt ctagtcccgc tgaatctggg tcgatgccca tgtaggtcag cttggcgcgg 173400
tccaacggcg tgagttgatc tgtcgaggtg attggcaccg acgagacggc atcatgcggc 173460
gatggggtct gcgggaaagg tgatcccagc acttcagaca ctccgccgaa cacttcggac 173520
agcactacat cggcccagcc agtcatgctc gcgacgataa gaccacgtgc ggctcaggcg 173580
ctaccaacac cgccacattc tccaagccac tccgagacac cgcttgtcta cagggccggg 173640
tgactttagt tgtcttctcg acacgccgcc ccacatacgc ggtagtaccg cgagagtggt 173700
gtaacacttt gctcgataac accacctgca ccacagaaa gaaggcgatg cccacgagct 173760
gacgcagaac aattcaatag cactcaacaa ccggtgtaga tcacccatct gaagcgacaa 173820
aagccccgcc aaaggcgggg cctgtgtctc agtttcgaac cgagtaggcg ctcggtcctg 173880
ggtcttcacc cgtatccct gaagggacag tcgaaatgcc cgactcgtct catggtagtg 173940
catgcccggt agtctttcca gattcgccgc gcgccttgtg cgcaaaccgt gaccaaaagg 174000
cggcaggcga ccgttgccgc cgaccgtttg ctccagcgtc gtcgcggacg taccgcggct 174060
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catttcgccg tggctgccgc ctttccggcc aagat 174155
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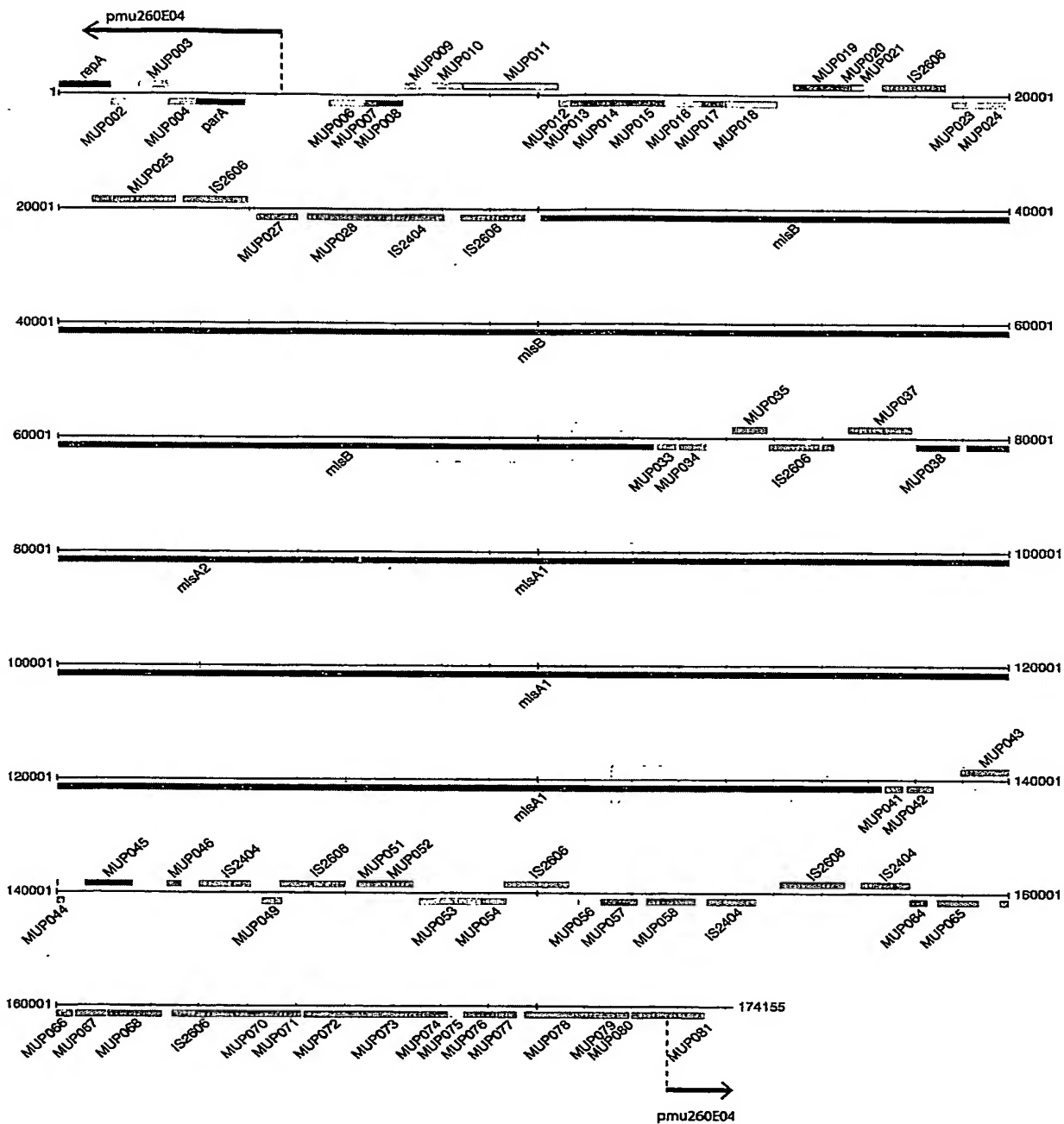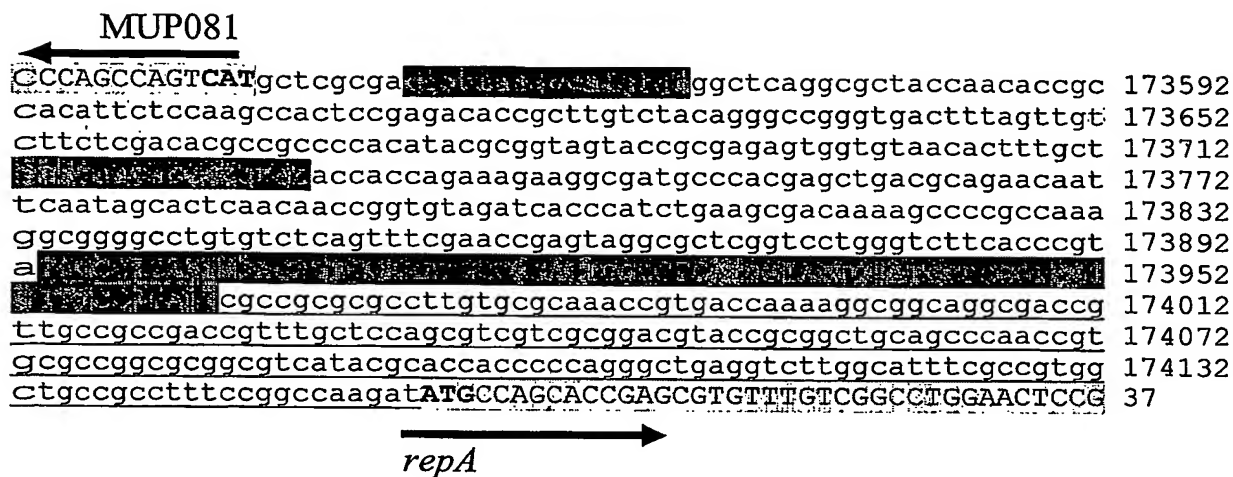
FIGURE 18(continued)

FIGURE 19

MUP081

```
CCCAGCCAGTCATgctcgcga▮▮▮▮▮▮▮▮▮▮▮ggctcaggcgctaccaacaccgc  173592
cacattctccaagccactccgagacaccgcttgtctacagggccgggtgactttagttgt  173652
cttctcgacacgccgccccacatacgcggtagtaccgcgagagtggtgtaacactttgct  173712
▮▮▮▮▮▮▮▮▮▮▮▮▮accaccagaaagaaggcgatgcccacgagctgacgcagaacaat  173772
tcaatagcactcaacaaccggtgtagatcacccatctgaagcgacaaaagccccgccaaa  173832
ggcggggcctgtgtctcagtttcgaaccgagtaggcgctcggtcctgggtcttcacccgt  173892
a▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮  173952
▮▮▮▮▮▮cgccgcgcgccttgtgcgcaaaccgtgaccaaaaggcggcaggcgaccg  174012
ttgccgccgaccgtttgctccagcgtcgtcgcggacgtaccgcggctgcagcccaaccgt  174072
gcgccggcgcggcgtcatacgcaccacccccagggctgaggtcttggcatttcgccgtgg  174132
ctgccgcctttccggccaagatATGCCAGCACCGAGCGTGTTTGTCGGCCTGGAACTCCG   37
```

repA

FIGURE 20

FIGURE 21

M   1   2   3   M   1   2   3

23.1 kb

9.4 kb

6.6 kb

4.4 kb

A

B

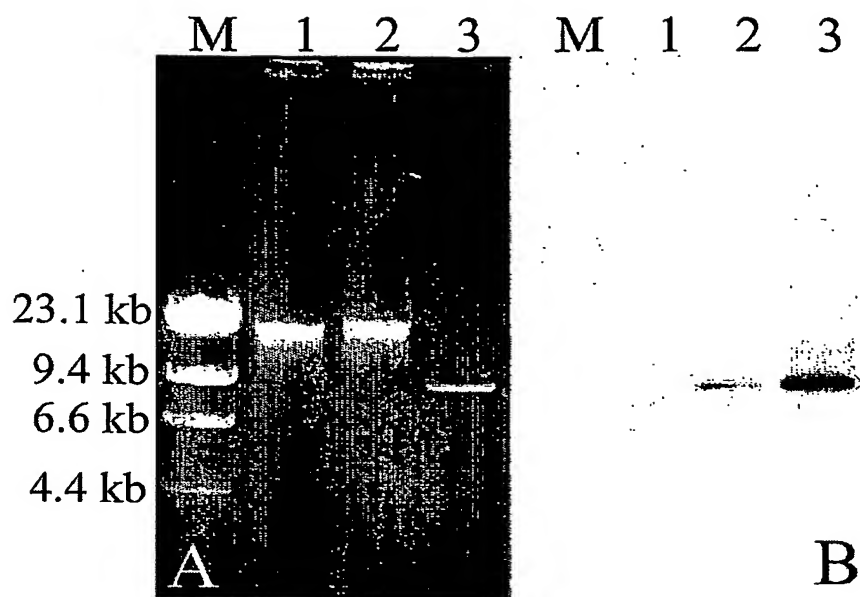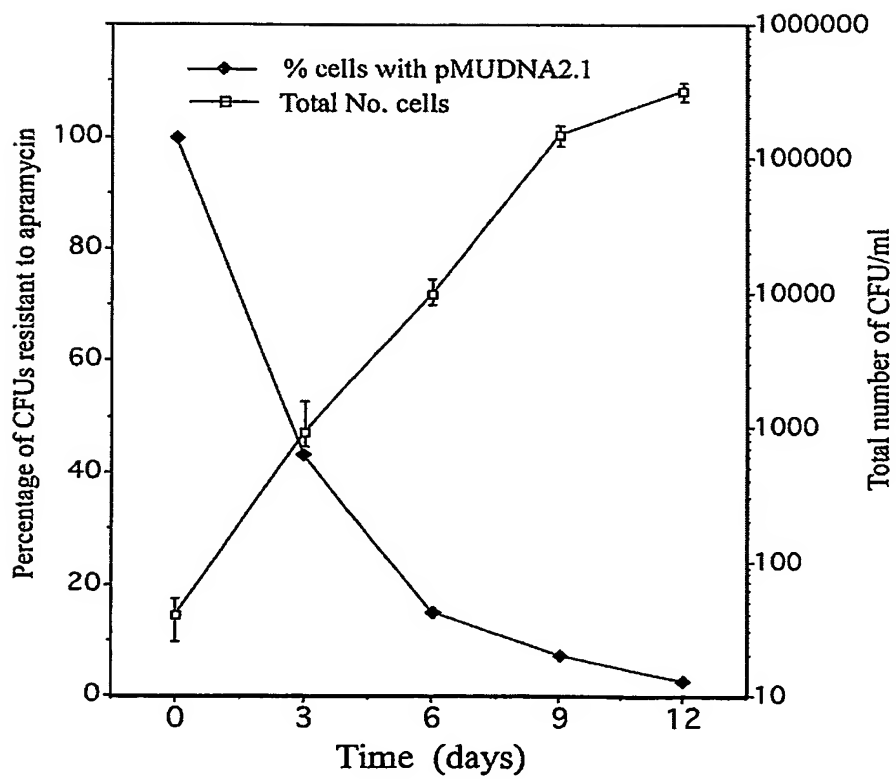**FIGURE 22A**   **FIGURE 22B**

FIGURE 23

AGCGCAGGGCGG<u>GGTGCCCAGG</u>|CAGGGC...GCCCTG|GGTGCCCAGGTATGGCT [SEQ ID NO.:59] 10 bp

CGGCGCGGGTTG<u>CTGCGGCGGC</u>|CAGGGC...GCCCTG|CCGCGGCGGCAAGTCGG [SEQ ID NO.:60] 10 bp

AACACCGCATTC<u>CCCGGTCACC</u>|CAGGGC...GCCCTG|CCCGGTCACCGCCGCCG [SEQ ID NO.:61] 10 bp

GGCAACGGATCT<u>AGCCGGGGTG</u>|CAGGGC...GCCCTG|AGCCGGGGTGCAGTCGG [SEQ ID NO.:62] 10 bp

CGAGGCCATCGC<u>CATCGCCGCC</u>|GAGGGC...GCCCTG|CATCGCCGCCGAACCCT [SEQ ID NO.:63] 10 bp

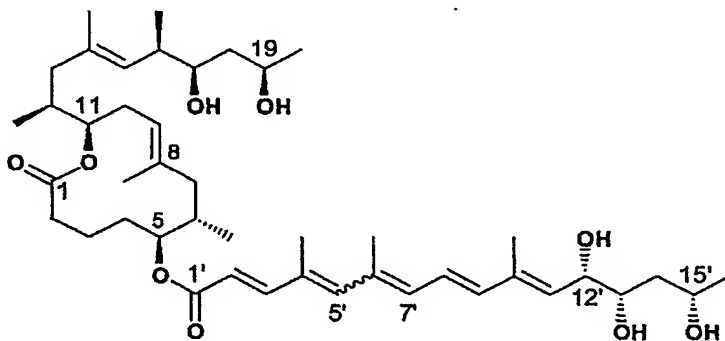ACGATGCCGGAG<u>AATCTCAGCG</u>|CAGGGC...GCCCTG|AATCTCAGCGCCGGGGG [SEQ ID NO.:64] 10 bp
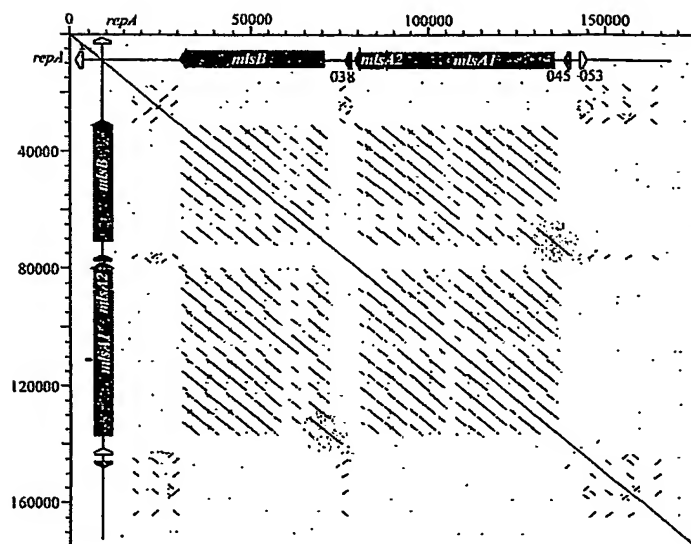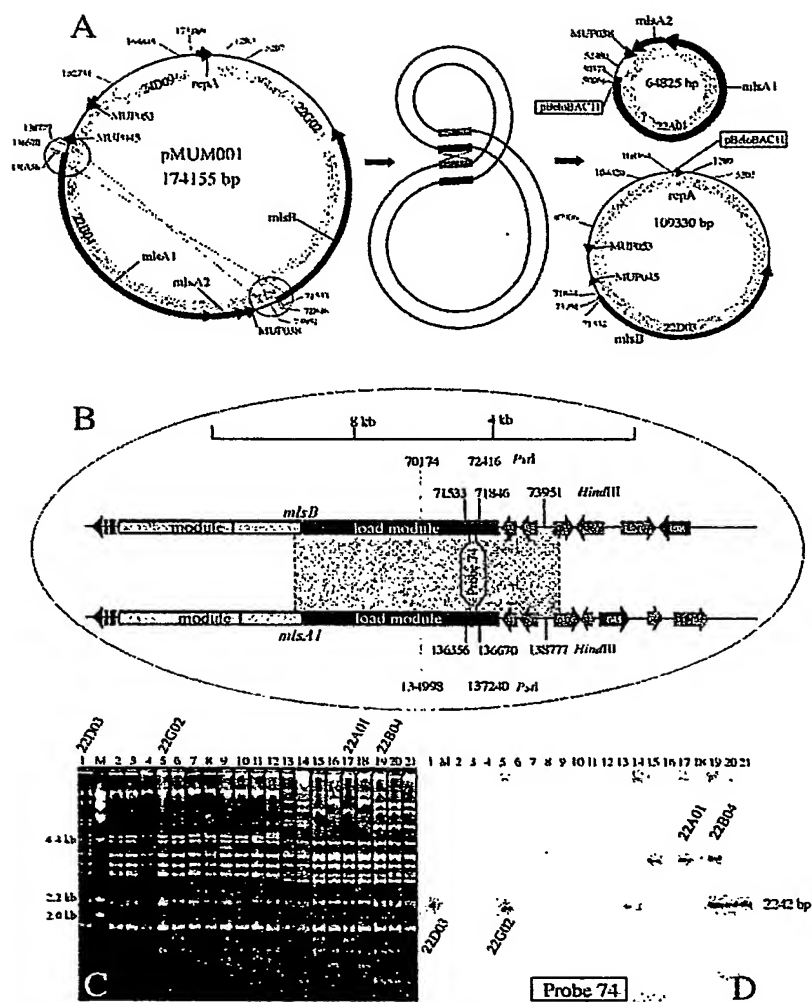
FIGURE 24

FIGURE 25

FIGURE 26

FIGURE 27A - FIGURE 27B - FIGURE 27C - FIGURE 27D
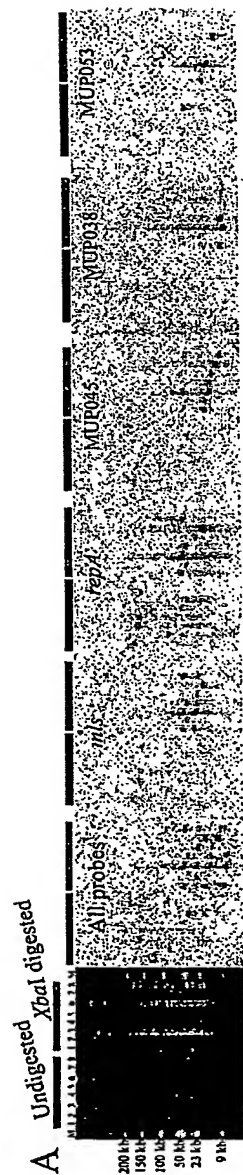
FIGURE 28A   **FIGURE 28B**

FIGURE 29A - FIGURE 29B

A   1266 bp - *repA, purA, 045, mls*

941331	acgcgcctgc	tcgacg
1615	....	......
105425	....	......
Chant	....	......
941328	.t.........	......
Kob	....	......
Agy99	....	......
01G897	g.at..t...	.tag..
98912	g..ta.....	..a..a
5114	g..t.t.ctt	..a.t.

B   2208 bp - *repA, parA, 011, mls, mlsAT(II), 038, 045*

941331	acgcccgaac	att	[SEQ ID NO: 37]
Chant	....	...	
1615	....	...	
941328	.t........	...	
Agy99	........gt	...	
01G897	g.atttag..	ccc	[SEQ ID NO:38]

C
- 941328 (Malaysia)
- Agy99 (Ghana)
- Kob(Ivory Coast)
- 105425 (SE Australia)
- 941331 (PNG)
- 1615 Malaysia
- Chant(SE Australia)
- 98912 (China)
- 01G897 (Guyana)
- 5114 (Mexico)

D
- 941328
- Agy99
- 941331
- 1615
- Chant
- 01G897

E
- MU Africa
- MU SE Australia
- MU SE Asia
- MU China
- MU Mexico
- MU Surinam

F
053

5114	LGSNLPAPMRWLERRTRDDTLHLLLPPSLL	[SEQ ID NO:39]
1615	LGSNLPAPMRWLERRTRDDTPHLLLPPSLL	[SEQ ID NO:40]
Kob	LGSNLPAPMRWLERRTRDDTPHLLLPPSLL	[SEQ ID NO:41]
Agy99	LGSNLPAPMRWLERRTRDDTPHLLLPPSLL	[SEQ ID NO:42]
98912	LGSNLPAPMRWLERRTRDDTPHLLLPPSLL	[SEQ ID NO:43]
	***********...****.*****..********	

5114	AVEPPNHTRYRKAVSSVFTPKAVAGLRDHV	[SEQ ID NO:44]
1615	AVEPPNHTRYRKAVSSVFTPKAVAGLRDHV	[SEQ ID NO:45]
Kob	AVEPPNHTRYRKAVSSVFTPKAVAGLRDHV	[SEQ ID NO:46]
Agy99	AVEPPNHTRYRKAVSSVFTPKAVAGLRDHV	[SEQ ID NO:47]
98912	AVEPPNHTRYRKAVSSVFTPKAVAGLRDHV	[SEQ ID NO:48]
	*****************************.*	

5114	EETASALLDQLTDQASAVDIIARYCSQLPV	[SEQ ID NO:49]
1615	EETASALLDQLTDQASAVDIIARYCSQLPV	[SEQ ID NO:50]
Kob	EETASALLDQLTDQASAVDIIARYCSQLPV	[SEQ ID NO:51]
Agy99	EETASALLDQLTDQASAVDIIARYCSQLPV	[SEQ ID NO:52]
98912	EETASALLDQLTDQASAVDIIARYCSRLPA	[SEQ ID NO:53]
	**************************.**.	

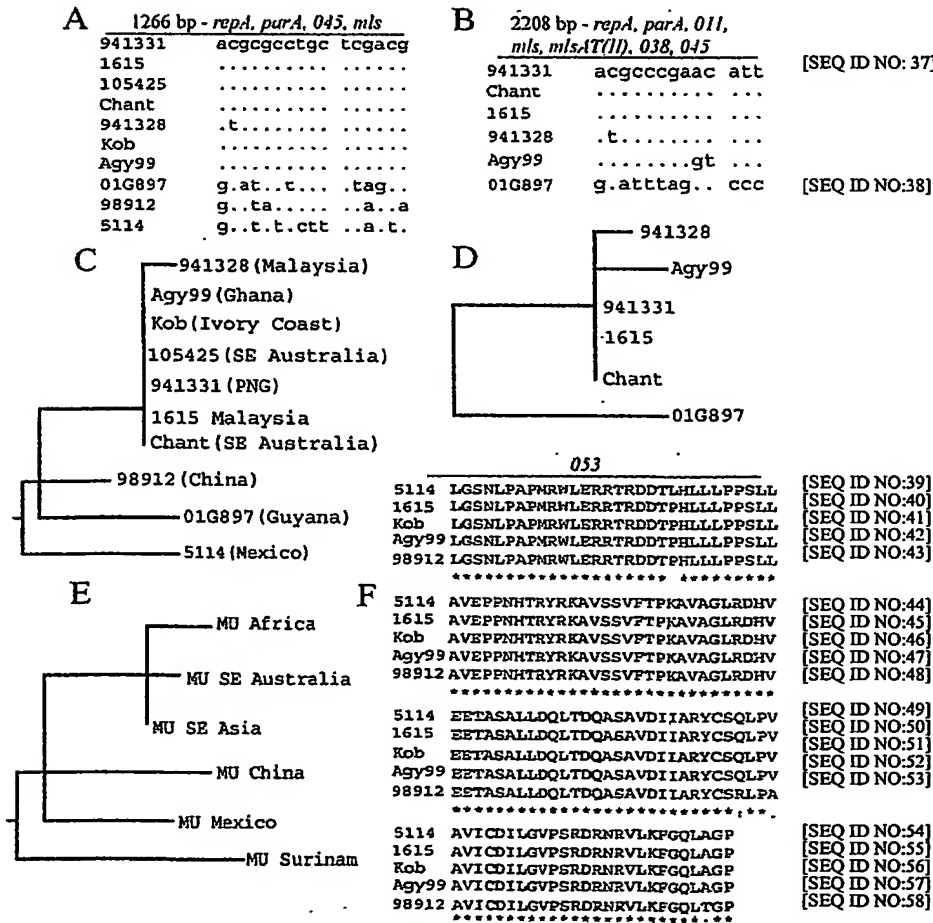| 5114 | AVICDILGVPSRDRNRVLKFGQLAGP | [SEQ ID NO:54] |
1615	AVICDILGVPSRDRNRVLKFGQLAGP	[SEQ ID NO:55]
Kob	AVICDILGVPSRDRNRVLKFGQLAGP	[SEQ ID NO:56]
Agy99	AVICDILGVPSRDRNRVLKFGQLAGP	[SEQ ID NO:57]
98912	AVICDILGVPSRDRNRVLKFGQLTGP	[SEQ ID NO:58]
	*********************...*.**.	

FIGURE 30A - FIGURE 30B - FIGURE 30C - FIGURE 30D -FIGURE 30E - FIGURE 30F
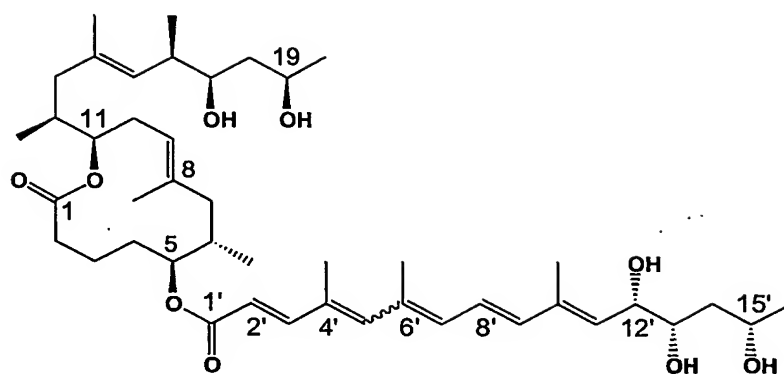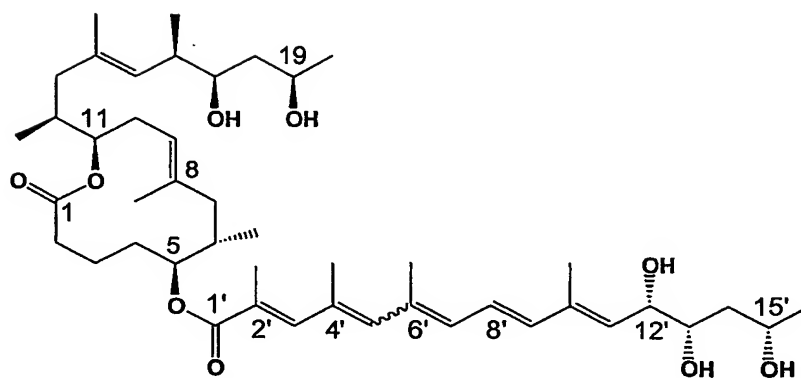
FIGURE 31A

FIGURE 31B

FIGURE 32

FIGURE 33

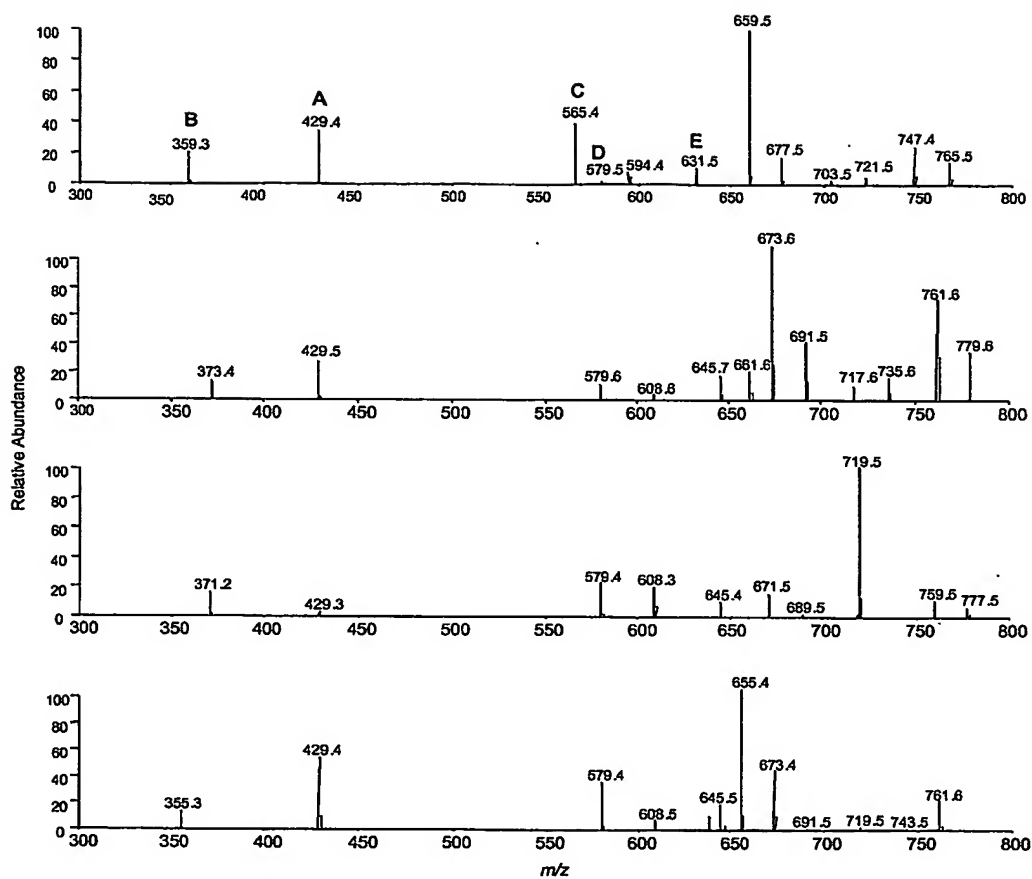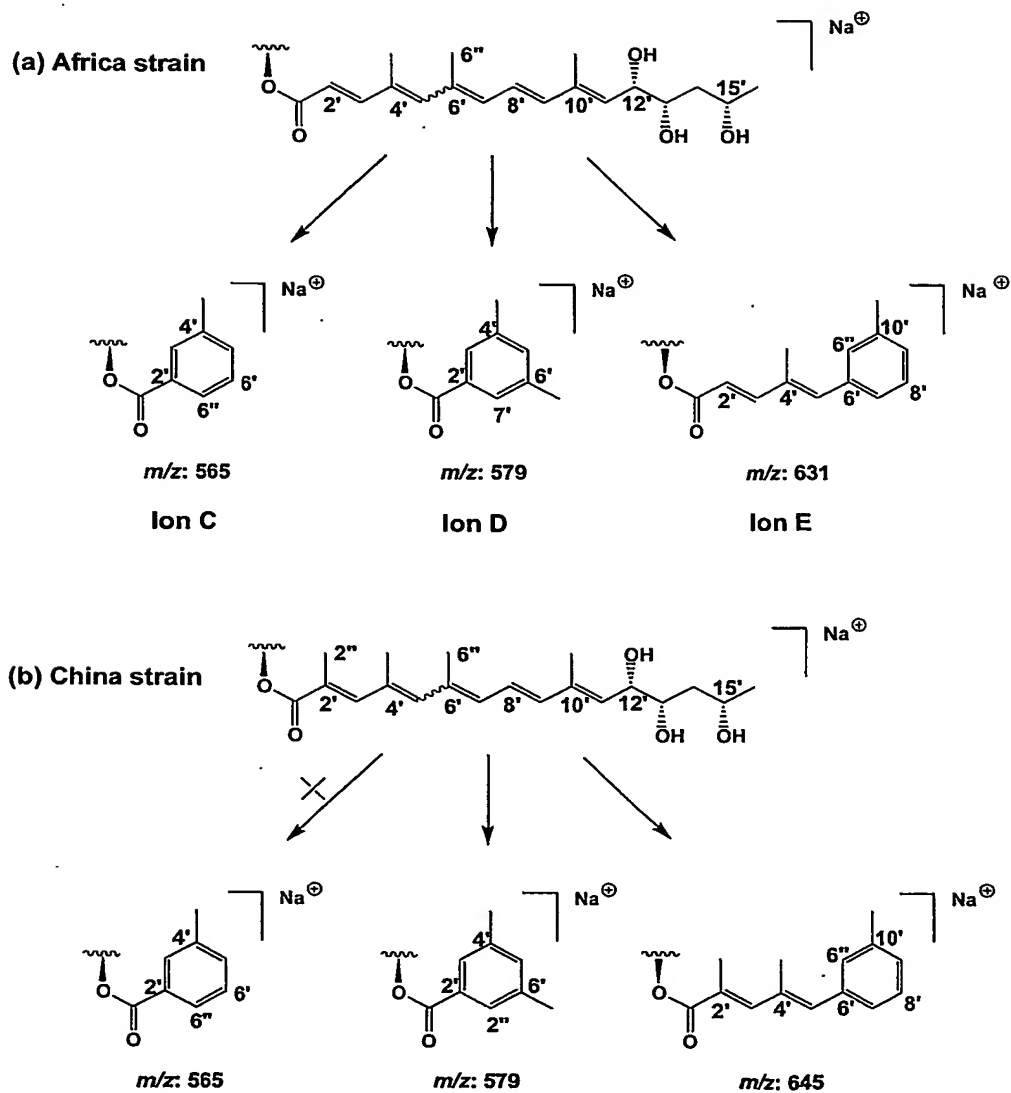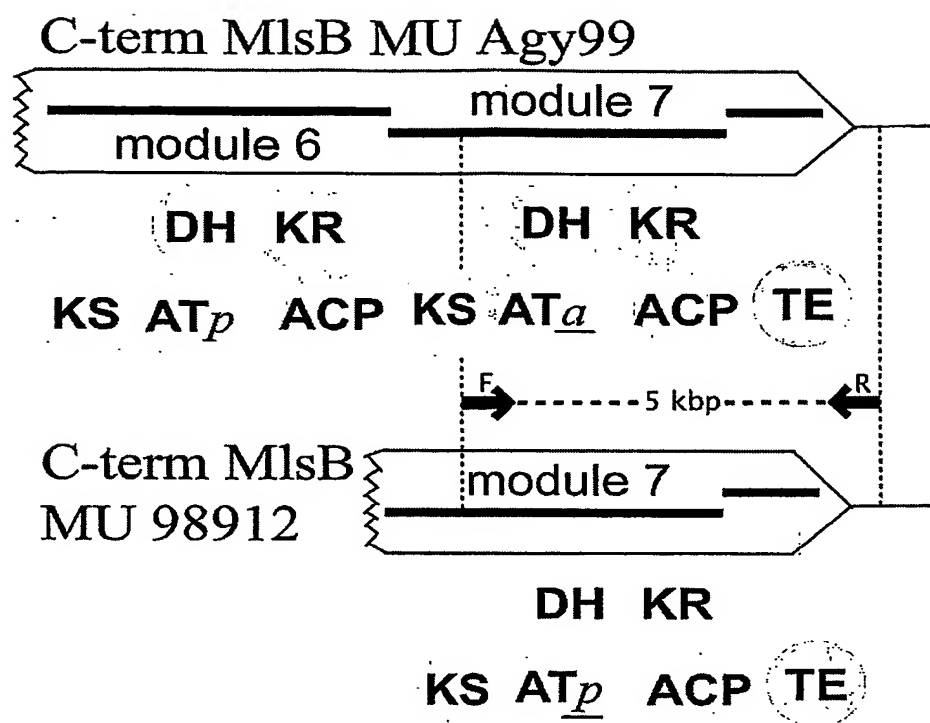**FIGURE 34**

```
Agy99 -AT6    PHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQG
98912 -AT7    PHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQG
Agy99 -AT7    PHRATITTSIEHHSENNHDTTDALAALHALANNGTHPLLSRGLLTPQGPGKTVFVFPGQG
              ************************************************************


Agy99 -AT6    SQYPGMGADLYRQFPVFAHALDACDAALQPFTGWSVLAVLHDE---PEAPSLRRVDVVQP
98912 -AT7    SQYPGMGADLYRQFPVFAHALDACDAALQPFTGWSVLAVLHDE---PEAPSLRRVDVVQP
Agy99 -AT7    SQYPGMGADLYRQFPVFAHALDEVAAALNPHLDVALLEVMFSQQDTAMAQLLDQTFYAQP
              *********************        ***:*      . .:*  *:.    .* *::.      *:*


Agy99 -AT6    VLFSVMVSLAALWRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVAIRSRVLTDLA
98912 -AT7    VLFSVMVSLAALWRWAGITPDAVIGHSQGEIAAAHVAGALTLPEAAAVVAIRSRVLTDLA
Agy99 -AT7    ALFALGTALHRLFTHAGIHPDYLLGHSIGELTAAYAAGVLSLQDAATLVTSRGRLMQSCI
              :**::  .:*    *:   ***:**  **::**    **.*:*  :**::*:   *.*::


Agy99 -AT6    GAGAMASVLSPEEPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLITCEHENIDA
98912 -AT7    GAGAMASVLSPEEPLTQLLARWDGKITVAAVNGPASAVVSGDTTAITELLTTCEHENIDA
Agy99 -AT7    PGGTMLALQASEAEVQPLLEGLDHAVSIAAINGATSIVLSGDHDSLEQIGEHFITQDRRT
               .*:*  :: :.*    :   **    *   :::**.**.:*  *:***     ::          .*:


Agy99 -AT6    RAIPVDYPSHSPYMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYW
98912 -AT7    RAIPVDYPSHSPYMEHIRHQFLDELPELTPRPSTIAMYSTVDGEPHDTAYDTTTMTADYW
Agy99 -AT7    TRLQVSHAFHSPHMDPILEQFRQIAAQLTFSAPTLPILSNLTG---QIARHDQLASPDYW
              :  *.: ***:*: * .**  :  .:**   .*:.: *.: *    :  *  . .:.**


Agy99 -AT6    YRNIRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRP
98912 -AT7    YRNIRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRP
Agy99 -AT7    TQQLRNTVRFHDTVAALLGAGEQVFLELSPHPVLTQAITDTVEQAGGGGAAVPALRKDRP
               ::  *************************************** ****************


Agy99 -AT6    DAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAM
98912 -AT7    DAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAM
Agy99 -AT7    DAVAFAAALGQLHCHGISPSWNVLYCQARPLTLPTYAFQHQRYWLLPTAGDFSGANTHAM
              ************************************************************
```
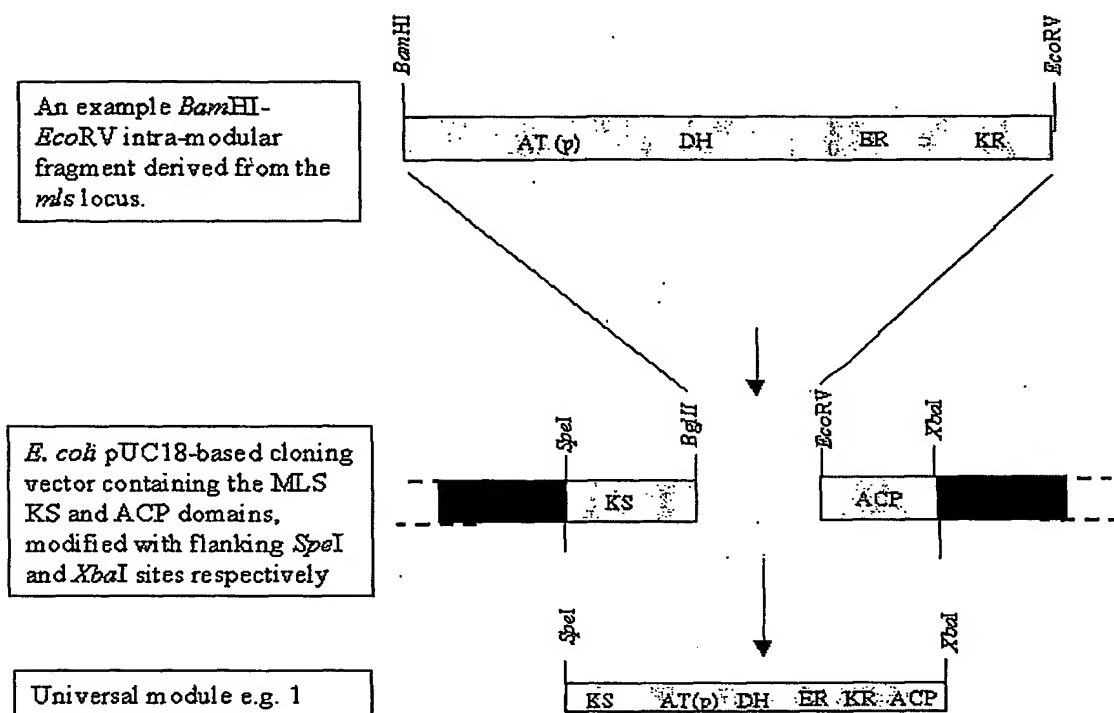
FIGURE 35

An example *Bam*HI-
*Eco*RV intra-modular
fragment derived from the
mls locus.

E. coli pUC18-based cloning
vector containing the MLS
KS and ACP domains,
modified with flanking *Spe*I
and *Xba*I sites respectively

Universal module e.g. 1

BamHI   AT (p)   DH   ER   KR   EcoRV

SpeI   KS   BglII   EcoRV   ACP   XbaI

SpeI   KS   AT(p)   DH   ER   KR   ACP   XbaI

FIGURE 36

FIGURE 37